University of New Haven

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Thomas and Sarah Mifflin, a well-to-do Quaker ole, sat for this portrait by John Singleton Copley. Note that Mrs. Mifflin's hands are busy weaving thread into a strip of tissue, while her husband marks his place in the book he is reading. Literacy women was not considered a necessity until well into the nineteenth century.

Undergraduate Catalog 1986-1988

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University of New Haven

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UNDERGRADUATE CATALOG 1986-88

300 Orange Avenue
West Haven, Conn. 06516
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This catalog supersedes all previous bulletins, catalogs and brochures published by the University of New Haven and describes academic programs to be offered beginning in fall 1986. Undergraduate students admitted to the university for the fall of 1986 and thereafter are bound by the regulations published in this catalog. Those admitted prior to fall 1986 are bound by those new regulations which have been duly instituted and announced prior to the semester during which they are effective.

The University of New Haven is committed to equal access to educational and employment opportunities at the university for all applicants regardless of race, creed, color, religion, sex, national origin, age or disability in compliance with federal and state statutes. Benefits, privileges and opportunities offered by the University of New Haven are available to all students and employees on a non-discriminatory basis in accordance with federal and state statutes. In recruitment of students and employees, the University of New Haven subscribes to a policy of affirmative action and equal opportunity.

Inquiries regarding affirmative action, equal opportunity and Title IX may be directed to the director of equal opportunity.

Any male generic terms and titles appearing throughout this book refer to both males and females and are used for grammatical simplicity and semantic convenience.

The university reserves the right, at any time, to make whatever changes may be deemed necessary in admission requirements, fees, charges, tuition, policies, regulations and academic programs prior to the start of any class, term, semester, trimester or session.

Every effort has been made to ensure that the information contained in this publication is accurate and current as of the date of publication; however, the university cannot be held responsible for typographical errors or omissions that may have occurred.

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CONTENTS

Program Listing **4**

Academic Calendar **6**

General Information **13**

Facilities **15**

Schools of the University **17**

Degrees of the University **20**

Student Life **23**

Admission and Registration **33**

Academic Regulations **39**

Tuition, Fees and Expenses **53**

Financial Aid **59**

University Core Curriculum **67**

School of Arts and Sciences **73**

School of Business **115**

School of Engineering **143**

School of Hotel, Restaurant and Tourism Administration **169**

School of Professional Studies and Continuing Education **187**

Course Descriptions **211**

Board, Administration and Faculty **275**

Campus Map **296**

Index **297**

PROGRAMS OF STUDY

School of Arts & Sciences

Applied Mathematics
  Computer Science, B.S. **102**
  Natural Science, B.S. **102**
Art, B.A. **93**
Biology, A.S., B.A., B.S. **77**
Biology – Premedical, Predental, Preveterinary, B.S. **78**
Biomedical Computing, B.S. **79**
Chemistry, B.A. **83**
Communication, B.A. **84**
Economics, B.A. **86**
English, B.A.
Environmental Science, A.S., B.S. **81**
General Studies, A.S. **76**
Graphic Design, A.S., B.A. **93**
History, B.A. **91**
Interior Design, A.S., B.A. **94**
Journalism, A.S. **85**
Mathematics, B.A. **102**
Music and Sound Recording, B.A., B.S. **99**
Photography, A.S. **96**
Physics, B.A., B.S. **104**
Political Science, B.A. **105**
Pre-architecture, B.A. **95**
Psychology, B.A. **107**
Social Welfare, B.A. **112**
Sociology, B.A. **111**
World Music, B.A. **98**

School of Business

Accounting
  Financial, B.S. **119**
  Managerial, B.S. **119**
Air Transportation Management, B.S. **126**
Business Administration, A.S., B.S. **127**
Business Economics, B.S. **124**
Communication, B.S. **121**
Criminal Justice
  Administration, A.S., B.S. **134**
  Corrections, A.S., B.S. **134**
  Forensic Science, B.S. **135**

Law Enforcement Science, B.S. **136**
Security Management, B.S. **137**
Finance, B.S. **120**
Human Resources Management, B.S. **128**
International Business, B.S. **131**
Management Information Systems, B.S. **127**
Management Science, B.S. **128**
Marketing, B.S. **131**
Public Administration, B.S. **139**

School of Engineering

Chemistry, A.S., B.S. **149**
Chemical Engineering, B.S. **147**
Civil Engineering, A.S., B.S. **151**
Computer Science, A.S. **159**
Software Systems, B.S. **158**
Industrial Applications, B.S. **159**
Electrical Engineering, A.S., B.S. **154**
Industrial Engineering, A.S., B.S. **156**
Industrial Technology
—Shipbuilding, B.S. **166**
Materials Technology, A.S., B.S. **162**
Mechanical Engineering, A.S., B.S. **162**
Mechanical Technology
—Shipbuilding, A.S. **165**

School of Hotel, Restaurant and Tourism Administration

Dietetic Technology, A.S. **183**
Executive Housekeeping Administration, A.S. **175**
General Dietetics, B.S. **181**
Hotel and Restaurant Management, A.S., B.S. **174**
Institutional Food Service Administration, B.S. **182**
Tourism and Travel Administration, A.S., B.S., **179**

School of Professional Studies and Continuing Education

Air Transportation Management, B.S. **191**
Arson Investigation, B.S. **193**
Aviation Science, A.S. **191**
Fire and Occupational Safety, A.S. **195**
Fire Science
Administration, B.S. **194**
Technology, B.S. **194**
Occupational Safety and Health
Administration, A.S., B.S. **199**
Technology, A.S., B.S. **198**
Professional Studies, A.S., B.S. **202**

ACADEMIC CALENDAR

Undergraduate Day & Evening Divisions

Fall Semester 1986

August 1986	Tuition and residence charges due	**Fri., 1**
	Evening in-person registration	**Tues.-Wed., 19-20**
	Evening student orientation	**Wed., 27**
September 1986	Residence halls open - new students	**Mon., 1**
	Day student orientation	**Tues.-Wed., 2-3**
	Evening classes begin; Residence halls open - returning students	**Wed., 3**
	Day classes begin	**Thurs., 4**
	Last day to add day courses without late fee	**Tues., 9**
	Last day for schedule revision	**Fri., 12**
October 1986	Last day to petition for January graduation	**Wed., 15**
	Last day to drop courses	**Fri., 17**
November 1985	Day student pre-registration begins	**Mon., 3**
	No evening classes	**Wed., 26**
	Thanksgiving recess (Residence halls closed)	**Thurs.-Sat., 27-29**
December 1986	Evening student pre-registration begins	**Mon., 8**
	Intersession registration begins	**Wed., 10**
	Day classes end	**Fri., 12**
	Evening classes end	**Sat., 13**
	Reading day	**Sat., 13**
	Final examinations	**Mon.-Sat., 15-20**
	Last day of semester	**Sat., 20**
	Residence halls close	**Sat., 20**
January 1987	Commencement	**Sun., 18**

Intersession 1987

Classes begin	**Fri., 2**
Holiday	**Mon., 19**
Classes end	**Thurs., 22**

Spring Semester 1987

January 1987	Tuition and residence charges due	**Fri., 2**
	Evening in-person registration	**Tues.-Wed., 13-14**
	Evening student orientation	**Tues., 20**
	Residence halls open — new students	**Wed., 21**
	Residence halls open — returning students	**Thurs., 22**
	Day student orientation	**Thurs., 22**
	Day & evening classes begin	**Fri., 23**
	Last day to add day courses without late fee	**Tues., 27**
	Last day for schedule revision	**Thurs., 29**
February 1987	Holiday	**Mon., 16**
March 1987	Last day to petition for June graduation	**Mon., 2**
	Last day to drop courses	**Mon., 2**
	Spring recess (Residence halls closed)	**Mon.-Sat., 16-21**
	Classes resume	**Mon., 23**
April 1987	Day student pre-registration	**Mon., 6**
	Holiday	**Fri., 17**
	Summer session registration begins	**Mon., 21**
May 1987	Evening student pre-registration	**Mon., 4**
	Classes end	**Mon., 11**
	Reading day	**Tues., 12**
	Final examinations	**Wed.-Tues., 13-19**
	Last day of semester	**Tues., 19**
	Residence halls close	**Tues., 19**
June 1987	Commencement	**Sun., 7**

Summer Sessions 1987

May 1987	Classes begin	**Wed., 20**
August 1987	Classes end	**Sat., 22**

Fall 1987

August 1987	Tuition and residence charges due	**Mon., 3**
	Evening in-person registration	**Tues.-Wed., 18-19**
September 1987	Evening student orientation	**Tues., 1**
	Residence halls open - new students	**Mon., 7**
	Residence halls open - returning students	**Tues., 8**
	Holiday-Labor Day	**Mon., 7**
	Day student orientation	**Tues., 8**
	Classes begin	**Wed., 9**
	Last day to add day courses without late fee	**Mon., 14**
	Last day for schedule revision	**Wed., 16**

October 1987	Last day to petition for January graduation	**Thurs., 15**
	Last day to drop a class	**Fri., 16**
November 1987	Day student pre-registration begins	**Mon., 2**
	No evening classes	**Wed., 25**
	Thanksgiving recess (Residence halls closed)	**Wed-Sat., 26-28**
December 1987	Evening student pre-registration begins	**Mon., 7**
	Intersession registration begins	**Wed., 9**
	Day classes end	**Tues., 15**
	Evening classes end	**Tues., 15**
	Reading day	**Wed., 16**
	Final exams	**Thurs.-Wed., 17-23**
	Last day of semester	**Wed., 23**
	Residence halls close	**Wed., 23**
January 1988	Commencement	**Sun., 17**
	Intersession 1988	
	Classes begin	**Mon., 4**
	Holiday - Martin Luther King Day	**Mon., 18**
	Classes end	**Fri., 22**
	Spring 1988	
January 1988	Tuition and residence charges due	**Mon. 4**
	Evening in-person registration	**Tues.-Wed., 12-13**
	Evening student orientation	**Tues., 19**
	Residence halls open - new students	**Thurs., 21**
	Day student orientation	**Fri., 22**
	Residence halls open - returning students	**Sun., 24**
	Classes begin	**Mon., 25**
	Last day to add day courses without late fee	**Tues., 26**
February 1988	Last day for schedule revisions	**Mon., 1**
	Holiday - Presidents' Day	**Mon., 15**
March 1988	Last day to petition for June graduation	**Tues., 1**
	Last day to drop courses	**Fri., 4**
	Spring recess (Residence halls closed)	**Mon.-Sat., 14-19**
	Classes resume	**Mon., 21**
April 1988	Holiday - Good Friday	**Fri., 1**
	Day student pre-registration begins	**Mon., 4**
	Summer sessions registration begins	**Mon., 18**
May 1988	Evening student pre-registration begins	**Mon., 2**
	Classes end	**Mon., 9**
	Reading day	**Tues., 10**
	Final exams	**Wed.-Tues., 11-17**
	Last day of the semester	**Tues., 17**
	Residence halls close	**Tues., 17**

June 1988	Commencement	**Sun., 5**
	Summer Sessions 1988	
May 1988	Classes begin	**Wed., 18**
August 1988	Classes end	**Sat., 20**

Undergraduate Trimester Calendar
(Southeastern Conn. and other locations)

	Fall Trimester 1986	
September 1986	Classes begin	**Mon., 8**
November 1986	No Classes	**Mon.-Fri., 24-28**
December 1986	Classes end	**Fri., 12**
	Winter Trimester 1987	
January 1987	Classes begin	**Mon., 5**
	Holiday (Martin L. King)	**Mon., 19**
February 1987	Holiday (President's Day)	**Mon., 16**
April 1987	Classes end	**Fri., 3**
	Spring Trimester 1987	
April 1987	Classes begin	**Mon., 6**
	Holiday (Good Friday)	**Fri., 17**
May 1987	Holiday (Memorial Day)	**Mon., 25**
July 1987	Classes end	**Fri., 3**
	Summer Session 1987	
July 1987	Session begins	**Mon., 13**
August 1987	Session ends	**Fri., 21**
	Fall Trimester 1987	
September 1987	Classes begin	**Mon., 14**

November 1987	No Classes	**Mon.-Fri., 23-27**
December 1987	Classes end	**Fri., 18**
	Winter Trimester 1988	
January 1988	Classes begin	**Mon., 4**
	Holiday (Martin L. King)	**Mon., 18**
February 1988	Holiday (President's Day)	**Mon., 15**
March 1988	Classes end	**Thurs., 31**
April 1988	Holiday (Good Friday)	**Fri., 1**
	Spring Trimester 1988	
April 1988	Classes begin	**Mon., 4**
May 1988	Holiday (Memorial Day)	**Mon., 31**
July 1988	Classes end	**Fri., 1**
	Summer Session 1988	
July 1988	Session begins	**Mon., 11**
August 1988	Session ends	**Fri., 19**

THE UNIVERSITY

The University of New Haven is a private, urban, coeducational university with a contemporary and innovative view of higher education.

The undergraduate programs here are designed to meet the needs of today's students by offering them the professional training they will need for careers in a highly competitive job market.

The university balances its curriculum by offering a liberal, humanistic education with professional programs in business, engineering, computer science and other advanced technical programs.

The university also is flexible enough to meet the needs of students who work while they attend school at UNH. The Evening Division offers a range of programs at night. A cooperative education program makes it possible for students to alternate semesters of class attendance with related work experience.

By responding to the educational needs of our students, the University of New Haven has become a major regional university serving both our students and the business community.

Accreditation

The University of New Haven is a coeducational, non-sectarian, independent institution of higher learning, chartered by the General Assembly of the State of Connecticut.

The University of New Haven is fully accredited by the New England Association of Schools and Colleges which accredits schools and colleges in the six New England states. Membership in the association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators.

The university holds membership in the American Council on Education, the Association of American Colleges, the National Association of Independent Colleges and Universities, the Accreditation Board for Engineering and Technology, the Criminal Justice Accreditation Council, the American Dietetics Association, the College Entrance Examination Board and is a member of other regional and national professional organizations.

Individual programs, departments and schools hold various forms of national professional accreditations, listed under relevant sections of the catalog.

History

The University of New Haven was founded in 1920 as the New Haven YMCA Junior College, a branch of Northeastern University. The college became New Haven College in 1926 by an act of the Connecticut General Assembly. For nearly 40 years, the college held classes in space rented from Yale University.

In September 1958, the college completed construction of a classroom building on Cold Spring Street, New Haven, for its daytime engineering building. That same year, the college received its first authorization from the Connecticut legislature to offer the bachelor of science degree in the fields of business accounting, management and industrial engineering.

But though its student body on the new Cold Spring Street campus numbered fewer than 200 persons, the college's facilities were fast becoming overcrowded. To meet the needs of the college and the local community, the Board of Governors purchased, in 1960, three buildings and 25 acres of land in West Haven, formerly belonging to the New Haven County Orphanage.

The combination of increased classroom space and the four-year degree program sparked a period of tremendous growth in enrollment and facilities. In 1961, the year after the college moved to West Haven, the graduating class numbered 75. More than twenty years later, the figure has climbed to more than 1,200.

New Haven College received full accreditation of its baccalaureate programs from the New England Association of Schools and Colleges in 1966. In 1969, the college took a major step forward with the addition of the Graduate School. Initially offering programs in business administration and industrial engineering, the Graduate School expanded rapidly. Today, 23 programs and additional courses have pushed graduate enrollment to more than 2,600.

On the fiftieth anniversary of the founding of the college, in 1970, New Haven College became the University of New Haven, reflecting the increased scope and the diversity of academic programs offered.

Today, the university offers more than 100 graduate and undergraduate degree programs in six schools: the Graduate School and the School of Art and Sciences, the School of Business, the School of Engineering, the School of Hotel, Restaurant and Tourism Administration and the School of Professional Studies and Continuing Education.

Undergraduate courses and programs are offered in West Haven on the main campus as well as in the Groton/New London area and other off-campus and in-plant sites. Graduate courses and programs are offered in West Haven and in Danbury, Clinton, Waterbury, Middletown, Trumbull, Stamford, Groton/New London and Torrington.

Philosophy

The basic assumptions and goals that have governed and continue to govern the academic programs and life of the university are four:

- the belief that there is value and virtue in a general education to help students acquire an understanding of society and the place of the individual within it,
- a conviction that the hallmark of an educated person is a critical mind in the sense of a capacity to test and challenge previous assumptions and new ideas,
- a strong commitment to the principle that in a complex and technological society a university cannot be insensitive to the need of its students for professional training which will enable them to obtain rewarding and productive employment, and
- that a higher education must provide students with a breadth of knowledge and a sensitivity to weigh ethical and moral issues and form values and life goals.

Other assumptions and considerations governing the academic programs and activities of the university are:

- the need for students to participate in work and service activities which provide contacts with other aspects of society and in using skills and exercising judgment and responsibility in a variety of settings outside the university community.

- the importance of allowing full play and scope to the creative abilities and intellectual curiosity of students through opportunities to pursue independent study and investigation.
- the importance of recognizing the educational interest of students geared toward specific professions and careers as students seek to adjust to changing labor market conditions, and the preparation of students for graduate and professional training beyond the baccalaureate.

Services and Facilities of the University

The Institute of Computer Studies

The University of New Haven Institute of Computer Studies (ICS) is an academic organization merging people, ideas and resources to promote, enhance and provide support for computer-related programs and activities at UNH. The institute also assists and facilitates departmental and multi-disciplinary development of new programs and serves as a focal point for providing education-related services to business and industry.

The University of New Haven has fostered the multi-faceted development of computer science and computer-related courses in each school. An increasing number of faculty and students are becoming interested in some aspect of computing. The institute provides coordination and leadership for the breadth and scope of these activities, including information and guidance about our many fine programs, information about grants, and enlightenment through non-credit courses to the community at large.

The organization was created from the recognition of this growing, multi-disciplinary diversity of computer needs and applications in the university community. In particular, the specific areas which encompass the activities of the institute are:

1. Support science and applications research.
2. Provide coordination for computer-related activities and long-range planning of computer resources.
3. Assist industrial firms in assessing and providing their computer training requirements.
4. Assist departments in offering non-credit courses in computer-related areas.
5. Assist departments in developing new programs and courses.
6. Counsel students in appropriate computer-related programs.
7. Disseminate information concerning academic computing activities.

Facilities

The university's 70-acre campus contains 19 buildings that offer students modern laboratory and library facilities, the latest in computer technology and equipment, an athletic complex and residential facilities.

Located in West Haven, about 10 minutes from downtown New Haven, the main campus includes administration and classroom facilities in the Main Administrative Building, the Graduate School, the Engineering and Sciences Building, Echlin Hall Computer Center facilities, the Marvin K. Peterson Library, the Student Center and bookstore, the Psychology Building, Robert B. Dodds Hall and residence halls.

The south campus includes Harugari Hall and the Student Services and Admissions Building, while the north campus is the site of the university's athletic fields and gymnasium.

Some of these facilities are described in the following paragraphs.

Marvin K. Peterson Library

The Marvin K. Peterson Library, named in honor of a former president of the university, was opened in 1974. Adjoining the Main Building, it includes special collection rooms, a music room, archives and spacious reading and reference areas. Study is made convenient by modern research facilities and equipment including microreading stations and microform reader-printers, as well as computer terminals.

The library contains space for approximately 300,000 volumes, including U.S. government documents. The library subscribes to over 1,000 periodicals and maintains extensive back issues files.

The resources of both the New Haven and West Haven public libraries are available to students (non-residents must pay a fee). Under a reciprocal arrangement, University of New Haven students may borrow materials from the libraries of Albertus Magnus College and Quinnipiac College by presenting a valid identity card.

Computer Center

The university Computer Center in Echlin Hall provides a state-of-the-art facility to both academic and administrative functions at the university. The center maintains three independent processing units, each accessible from any given terminal via a network processor capable of polling for ports, both direct-connect and dial-up. Further, these three processors are locally networked via XODIAC (Data General's network support system). The center also supports several popular micro-computers.

The academic facility's primary computers are the Data General MV8000 and the S-140. Both are the Eclipse line. The MV8000 is a 32-bit processor: this system contains 10 megabytes of real main memory and has a virtual address range of 4 gigabytes. The CPU runs at 1.1 million instructions per second. The system has floating point hardware and functions in a multiprogramming/multitasking environment. The operating system is AOS/VS and is capable of handling 255 concurrent processes. The system presently supports 75 video-display tubes. A full-screen editor dramatically enhances program generation and throughput. All programming is done interactively. Communication capabilities include such protocols as SNA, X.25, XODIAC and simulations of HASP, RJE80 and IBM-2780/3780 are also available.

Software support includes ANSI languages such as COBOL, Fortran-77, PL/1, RPG-II, BASIC, Pascal, C, APL and a native 32-bit Assembler. Various packages such as a database manager (DBMS), word processing, a SORT/MERGE package, SPSS, BMDP, IMSL subroutine library and TWODEPEP (finite element package) are all readily available for users. Other packages include discrete and continuous simulation (SLAM), marketing simulations, mechanical engineering applications programs, civil engineering applications programs and mathematical differential system simulations. Many other popular software packages (UNIX, VLSI, etc.) are also available.

The center also provides access to a Tektronics 4027 raster display, four 4105 color rasters and a 4662 multi-color plotter. These graphics tubes are driven by PLOT-10 and IGL. The computing curriculum now includes several graphics courses.

The Data General S-140 is used to drive a MEGATEK Vector Refresh Graphics unit. The MEGATEK has a 4096 x 4096 screen and supports KB entry, joystick, light-pen and tablet unit. The graphics processor includes hard-wired 3-D, rotational/translation features and all are activated by Fortran callable routines. Software includes WAND which generates graphics commands. In-house programs have been developed to aid users in development of applications programs. The S-140 is a 16-bit processor, has a 1/2 megabyte main memory and

supports up to 5 terminals with all active at present. The operating system is AOS and communicates with the MV8000s through XODIAC allowing the S-140 users to make use of the 32 bit compilers on the MV8000.

Students and faculty have access to all of the above facilities.

Microcomputer Laboratories

The university maintains two microcomputer laboratories; they're located in Echlin Hall and are open to the entire university community. The labs are equipped with IBM-PC or PC-compatible computers, each with 256K or more of RAM, dual disk drives, color-graphic screens and dot-matrix printers capable of text or graphic printing. A wide variety of software is available for use, including word processing programs, data base managers, spreadsheets and statistical software, and specialized packages for a variety of applications such as graphics production, nutritional analysis, digital circuit design, hotel administration, etc. Languages currently used for programming the microcomputers include: APL, Assembler, BASIC, Forth, Fortran, ICON, LISP, LOGO, Modula-2 and Pascal, all operating under MS-DOS. The Institute of Computer Studies provides a variety of support services for those who wish to learn more about using microcomputers.

Athletic Complex

The university's north campus houses the gymnasium, with seating for 1,500 at sporting events, a fully equipped weight room, racquetball court, and steam room.

On the adjacent grounds are six tennis courts, baseball and softball diamonds, and Robert B. Dodds Stadium, a combination football, lacrosse and soccer field, with seating for 3,500.

The National Art Museum of Sport

The National Art Museum of Sport was founded in 1959 and in 1964 received its charter from the New York State Board of Regents. Since 1979, its permanent collection has been located at the University of New Haven. Some fifty paintings, sculptures, drawings and prints are now displayed in the gallery, located in Robert B. Dodds Hall, the balance hanging in the Marvin K. Peterson Library. This collection, plus the museum's traveling collection, several works on loan elsewhere, and hundreds of photographs comprise what is generally credited to be America's largest and most diversified assemblage of sports art.

Schools of the University

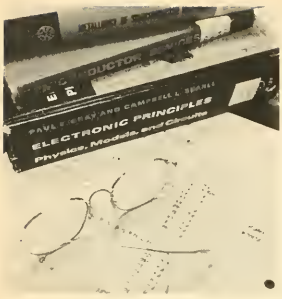
School of Arts and Sciences

The School of Arts and Sciences offers associate degree programs in seven academic fields and bachelor's degrees in 23 fields from art to world music. The school's certificate programs offer specialized instruction to students interested in a concentrated exposure to one subject area, in fields such as journalism, paralegal studies and graphic design.

Through the Graduate School, the School of Arts and Sciences also offers master's degree programs as well as a senior professional certificate. Detailed information on the graduate programs is available in the Graduate School catalog.

School of Business

The School of Business offers programs in the departments of accounting/finance; communication; economics and quantitative



analysis; management; marketing & international business; and public management which includes criminal justice, forensic science and public administration. Certificate programs cover fields such as supervisory management and management information systems.

Through the Graduate School, the School of Business offers master's degree programs as well as a number of business-related senior professional certificates.

School of Engineering

The School of Engineering offers degree programs in eight fields: chemistry, chemical engineering, civil engineering, computer science, electrical engineering, industrial engineering, materials technology and mechanical engineering.

Master of science degree programs and a senior professional certificate are offered through the Graduate School in several engineering fields. Students may consult the Graduate School catalog for more details.

School of Hotel, Restaurant and Tourism Administration

The School of Hotel, Restaurant and Tourism Administration offers degree programs through the departments of hotel and restaurant management, tourism and travel administration, and dietetics and institutional management. The school's many certificate programs offer concentrated study in fields such as culinary arts, food service education and club management.

Master of business administration concentrations in hotel and restaurant management and dietetics administration are offered through the Graduate School. Students may consult the Graduate School catalog for more details.

School of Professional Studies and Continuing Education

The School of Professional Studies and Continuing Education offers programs leading to the associate in science degree, the bachelor of science degree, and certain master of science degrees. In addition, the school offers certificates and graduate-level professional certificates as well as part-time credit and non-credit courses both on and off campus. The school has five distinct units:

Department of Professional Studies

Professional studies offers associate in science degree programs in aviation science, occupational safety and health, fire and occupational safety, and professional studies. Bachelor's degree programs are offered in fire science administration, arson investigation with a minor in criminal justice, fire science technology with a minor available in civil engineering, air transportation management and professional studies. The bachelor's degree in occupational safety and health permits the selection of a minor tailored to the interests of the individual.

Cooperative Education

Cooperative education (Co-op) is a unique academic program that enables a student to combine practical work experience with his or her college education. While earning a bachelor's degree, the student alternates periods of employment in the business or industrial community with periods of on-campus study in the job-related field.

Division of Evening Studies

A wide variety of undergraduate courses are offered in evening sessions during the fall and spring semesters. Summer day and

evening courses are offered during four-, five-, seven-, and nine-week sessions. During the winter intersession in January, both innovative and conventional intensive courses are offered mornings and afternoons. All the offerings in this division are credit courses leading to certificates or to associate and bachelor's degrees.

Those interested may call the Evening Studies Office to receive a schedule before each semester.

UNH in Southeastern Connecticut

UNH in Southeastern Connecticut is a division that offers programs at locations in the Groton-New London area.

Division of Special Studies

This division offers a variety of non-credit certificate courses in both specialized and general areas of study as well as intensive seminars and workshops. Non-credit courses offer the opportunity to upgrade professional skills, explore new directions and increase enjoyment of leisure time.

In conjunction with the Institute of Computer Studies, Special Studies offers a full range of computer courses from individual and family applications of home computers to advanced languages and applications for individuals with more experience, and business applications with specific and individualized focus.

Special Studies also provides the necessary courses for state certification in such fields as real estate and insurance as well as a large variety of personal enrichment and professional development workshops. Most courses meet one evening per week and generally include six to 12 sessions. The university awards continuing education units (CEUs) for successful completion of most courses.

Graduate School

The Graduate School, founded in 1969, offers the doctor of science, master's degrees in 23 programs, and 17 senior professional certificates beyond the master's degree. There are nine Graduate School locations throughout Connecticut. The main campus offers all academic programs. The off-campus centers at Clinton, Danbury, Groton, Middletown, Torrington, Trumbull, Wallingford and Waterbury offer courses leading to a master's degree in business administration and other selected programs.

Programs in the Graduate School include:

Accounting
Business Administration
Business Administration/Industrial Engineering dual degree
Business Administration/Public Administration dual degree
Community Psychology
Computer and Information Science
Criminal Justice
Electrical Engineering
Environmental Engineering
Environmental Science
Executive M.B.A.
Forensic Science
Gerontology
Humanities
Industrial Engineering
Industrial/Organizational Psychology
Industrial Relations
Legal Studies

Management Systems (Sc.D.)
Mechanical Engineering
Occupational Safety and Health Management
Operations Research
Public Administration
Taxation
Senior Professional Certificate Programs
Professional Certificate Programs

The Graduate School schedules its courses to meet the needs of working professionals. The trimester calendar begins each term in September, January and April. In addition, courses are offered during a special summer term beginning in July. Courses are scheduled during the afternoon, early evening and on Saturday.

Those who wish additional information about the Graduate School should write to Graduate Admissions to request a copy of the Graduate School catalog or call 932-7133.

Degrees Offered by the University

Undergraduate Degrees

The University of New Haven offers undergraduate programs leading to the bachelor of arts degree, the bachelor of science degree, the associate in science degree and a number of certificate programs.

Bachelor's Degrees

The bachelor's degree programs require approximately 120 credit hours of study and take four years for full-time day students. Many other University of New Haven students take advantage of the full range of courses offered in the evening and complete their undergraduate degree on a schedule that complements their own careers.

Associate Degrees

Associate degree programs are designed to encourage students to begin their college education even though they do not yet want to commit themselves to a full, four-year course of study. Sixty or more credit hours are required for the associate degree, and the credits earned may later apply toward the student's bachelor's degree.

Certificate Programs

Students can take their first step toward an undergradute degree by registering for one of the certificate programs offered by the university.

Each certificate program is carefully designed as a concentrated introduction to a particular subject area and consists of courses totaling 15 to 30 credit hours.

Later, students may choose to apply the credits they have earned toward their undergraduate degree at the university.

For a list of certificate programs, see page 206. Please contact the Evening Division for further details.

Graduate Degrees

Through the UNH Graduate School, programs are offered leading to the master of arts degree, the master of science degree, the master of public administration, the master of business administration, the executive master of business administration, the doctor of science in management systems and a number of professional and senior professional certificates.

STUDENT LIFE

John E. Benevento, acting dean of student affairs and services

Being a student at the University of New Haven means being a part of the New Haven community—a city noted for its music, theater, art galleries and more.

Musical entertainment ranges from year-round performances of the New Haven Symphony to rock concerts at the New Haven Coliseum to local bands at many downtown clubs. Professional theater thrives in New Haven at Long Wharf Theater, the Yale Repertory Company and the Shubert. Some of the region's outstanding art collections can be seen on the Yale University campus.

On weekends, the Connecticut shore, Cape Cod, the ski slopes of Vermont and New Hampshire, and New York City are just a car or bus ride away.

Activities on Campus

On campus, students can attend a variety of events including movies, lectures by a variety of well-known public figures, rock music concerts, student theatrical presentations and more.

Clubs and Organizations

More than 40 university student clubs and societies are open to interested students. Included are student chapters of professional societies, religious organizations, social groups and special interest clubs.

Councils

Separate day, evening and graduate student councils have the responsibility for initiating, organizing and presenting extracurricular activities and acting as liaison between students and the university staff.

The Day Student Government is a forum where undergraduate students can provide input to the administration to improve all aspects of undergraduate education at the university. The council schedules a number of extracurricular activities; all students are encouraged to participate.

Cultural Activities

There are student organizations formed around interests in literature, art, film and drama. These groups sponsor visiting artists and lecturers, produce plays and concerts, publish materials and generally provide a well-rounded cultural program for University of New Haven students.

Fraternities and Sororities

National and local service, social and honorary fraternities and sororities are active on campus. They sponsor programs such as the semi-annual bloodmobile and other services as well as social functions.

Publications

Student publications include *The News*, the university student newspaper; *The Chariot*, the annual yearbook; and the *The Noiseless Spider*, a literary publication. Students may volunteer their services on any of the student publications.

Social Activities

The social calendar is filled with varied events to appeal to all students: mixers, concerts, films, comedians and Homecoming.

Alumni Office

Patricia A. Morgan, director

Membership in the UNH Alumni Association is acquired automatically upon graduation. There are currently approximately 18,500 members.

Alumni are entitled to certain privileges including use of the library and athletic facilities, services of the Career Development Office and special alumni course auditing rates. ID cards issued to new graduates soon after graduation entitle alumni to these and other offerings.

Insight, containing news of campus and alumni happenings, is mailed five times a year. Homecoming, an annual scholarship ball, estate planning seminars and other educational and social events offer opportunities for continual contact with UNH and fellow alumni. Charter travel, life and major medical insurance programs are also available.

Alumni board members govern the association with the assistance of a council of additional alumni volunteers. The board and council serve as an advisory group to the university, working to strengthen bonds by promoting communication between all alumni and the UNH community.

A newly formed student alumni group will provide an additional link between students and alumni. Efforts will help increase students' awareness of the valuable role alumni can play in their lives and keep alumni informed of the special needs of students.

Athletics

William M. Leete, Jr., director

Recognizing the importance of a broad range of physical and emotional outlets to a well-balanced college experience, the University of New Haven seeks to involve the student on various levels of active participation in games and sports, as well as to provide an opportunity for community and student support for its varsity intercollegiate program.

Varsity Sports

During the fall, the university offers varsity cross country, football, soccer, women's tennis and volleyball. In the winter, men's and women's basketball as well as indoor track are the main attractions. During the spring, baseball, lacrosse, softball and outdoor track keep UNH athletic fields busy.

The athletic department coaching staff welcomes all interested candidates and invites active involvement in and support of its athletic programs.

The University of New Haven is a member of the Eastern College Athletic Conference, the National Collegiate Athletic Association, and the New England Collegiate Conference. Many of the Charger teams have national recognition throughout collegiate athletic circles. Our

athletes have traveled to Seattle, Wash.; Springfield, Ill.; Riverside, Cal.; Daytona Beach, Fla.; and Phoenix, Ariz., among other sites.

Intramural Programs

The intramural department sponsors a variety of events for interested students throughout the year. Tournaments and competition in touch football, basketball, handball, softball, racquetball, tennis and volleyball are offered. Team rosters are available in the athletic office and schedules are posted in the gymnasium.

Athletic Facilities

The north campus consists of Robert B. Dodds Stadium (with a multi-purpose natural surface field designed for football, soccer and lacrosse), six tennis courts, a softball field, a baseball diamond, an intramural field and a gymnasium.

The gymnasium houses two full-size basketball courts, a weight-training room, a steam room, a gymnastics area, a racquetball court and locker and shower areas for students and faculty.

A valid university ID card is required for admittance to the north campus gymnasium or tennis courts during free play hours. The gymnasium will open for free play at times when regularly scheduled games and varsity team practices are not in progress. Students should take care to secure their lockers or leave properly identified valuables with the equipment manager when using any facility.

While members of the university's athletic teams are covered under an appropriate insurance policy, students who participate in intramurals and free play are not covered by such a policy and participate at their own risk. The university recommends that students who plan to use any north campus facility for physical activity carry an appropriate insurance policy to cover medical costs in case of an injury.

Campus Store

Barbara Farrell, manager

The university's campus store sells all necessary texts, new and used, required for courses at the university. It also carries school supplies, greeting cards, imprinted clothing, gifts, candy and a selection of paperbacks, newspapers and periodicals. The campus store buys back certain used texts throughout the year. It also handles class ring orders and film processing for the campus community and will be happy to place special orders for any books.

Special arrangements are made for students taking courses at off-campus locations to purchase required books at or near off-campus centers.

Career Development Office

Pamela Francis, director

This office offers employment-related services to the university community. Among these are career counseling, advising, on-campus employment interviewing and extensive information about job opportunities.

Administrative and recruiting offices are located on the third floor of the Student Services & Admissions Building.

Career Development

To assist students in making appropriate career choices, individual/group counseling is available and is supplemented by several office resources. Special workshops on resumé preparation,

interviewing skills and job research techniques are scheduled in both the fall and spring semesters.

In addition, the office maintains an extensive library of career information, vocational resources, brochures and annual reports.

A professional career testing service is also available for those students with questions about what career direction to pursue.

Student Employment

While the office is not an employment service and does not guarantee jobs, extensive listings of both full- and part-time positions are maintained to provide a common meeting ground for employers and prospective employees. Undergraduate and graduate students will find this useful, both in locating part-time and full-time jobs while in school, as well as employment following graduation. Alumni seeking positions are encouraged to use the services of the office.

Employers wishing to list positions need only call or write, giving a description of the position available and other details. There is no placement fee charged for these services.

Job Placement for Graduates

During each academic year, employer representatives visit the campus to interview graduating University of New Haven students, both at the graduate and undergraduate levels. In addition, representatives of a number of graduate schools visit to interview seniors interested in pursuing graduate education.

Information

The Career Development Office regularly publishes and circulates a monthly campus recruiting schedule the first week of every month during the academic year. Information such as career development events, Career Days, workshops, seminars, recruitment visits, employment outlook for graduates, job listings, job search hints, etc., are included. Career development information also appears in *Insight*, the alumni publication, and in the weekly student newspaper, *The News*.

The recruitment schedule will be mailed to any member of the university community who wishes it and provides the office with a supply of stamped, self-addressed envelopes for the number of months desired.

Center for Learning Resources

Loretta K. Smith, director

The Center for Learning Resources, in the Main Administration Building, offers a tutoring service open to all students on campus, not just those in academic difficulty. The staff of instructors and student tutors provides tutoring in a variety of subjects including mathematics, engineering science, accounting, study skills, writing and computer science. All tutoring is free and no appointment is necessary. Daytime and evening hours are posted in the center. During the 1985 fall semester, the center provided more than 1,600 tutoring sessions to undergraduate students.

See also the previous section on the Developmental Studies program.

Cooperative Education Program

Cooperative education, known as Co-op, lets students explore their chosen careers by combining academics with practical, paid work experience.

For more detailed information, see the Cooperative Education section of this catalog, page 203.

Counseling Center

Dr. Deborah Everhart, director

Individual counseling is offered to students with personal problems. Students can also get assistance in choosing a major or course of study.

A student who does not know where to go for help should contact the Counseling Center for information and direction.

The Counseling Center also offers psychological testing including vocational interest, personality assessment and academic placement. Students who are unsure of their academic skills or eventual career choice of life goals may request help in these areas.

As a service to first-semester seniors and members of the community who are planning to apply to graduate schools, a controlled testing center is maintained on campus. Arrangements may be made with the center for administration of the Miller Analogies Test and the forwarding of the score to the graduate school of the applicant's choice. All students wishing to take the Miller Analogies Test should contact the Counseling Center.

Development Office

Nikki Lindberg, director

The Development Office staff work with the president of the university, board of governors, faculty and staff to secure both short and long term funding for enhancement of the university's programs and facilities. Funds are sought for student financial aid, faculty development, equipment, library resources and other institutional opportunities for growth over and above what can be achieved from regular and anticipated university income.

National and local foundations, parents, students, alumni and friends support these efforts and contribute to the excellence of the university. Students play an active role participating in fund raising events and soliciting for the annual alumni fund.

Developmental Studies Program

Dr. Nancyanne Rabianski, director

The developmental studies program is designed to strengthen the basic skills of entering students. Courses within the program are taught by members of the faculty of the mathematics department and the English department.

The English department offers three developmental courses: Reading Strategies, E 101; English Fundamentals, E 103; and Oral Exposition, E 114. The three courses offer students a comprehensive study of the basic reading, writing and speaking skills necessary in using our language effectively. Fundamentals of Mathematics, M 103, is taught by the mathematics department.

Placement in these courses is determined by examinations given by the respective departments. Such placement becomes a first priority for affected students because the university believes such students can become successful college students only upon correction of skill deficiencies.

Please note these special provisions concerning E 101, E 103 and M 103. E 101 is a one-credit course which cannot be applied toward a student's degree program. E 103 and M 103 each carry three college credits but cannot be applied toward students' degree programs. E 103 and M 103 usually meet for up to six hours per week to provide intensive help. At the conclusion of a semester, a student who has done outstanding work in E 103 may be nominated by his English instructor to take E 110 rather than E 105.

Complete descriptions of the developmental courses appear in this catalog as part of the course offerings of the mathematics department and the English department.

Disabled Student Services

Patricia Coleman, coordinator

The Disabled Student Services Office coordinates all referrals regarding physically handicapped and learning disabled students. It provides guidance, assistance and information for students with disabilities. This office also coordinates the university's compliance with Section 504 of the H.E.W. Rehabiliation Act of 1973 and other governmental regulations.

All referrals and inquiries concerning any matters relating to disabled students, accessible facilities and/or reasonable accommodations should be directed to this office.

Health Services

Patricia Coleman, assistant director

The University Health Services is open to all university students without charge. Located on the ground level in the rear of the Parc Vendome Residence Hall, the center is staffed with a nurse practitioner, registered nurses and an internist. Services available include treatment for minor illnesses and injuries, referrals for more serious conditions and coordination of health insurance provisions. The center is also a resource for information on health-related matters and on other medical services and facilities available in the community.

A part of the health program is a weekly women's clinic which takes place at the health center with a nurse midwife from the Yale School of Nursing.

One requirement of the health center is that all students entering the Day Division provide documentation of their medical and immunization history. This is done by completing the health form provided by the Undergraduate Admissions Office and returning it to the Health Services Office. This requirement is in compliance with the State of Connecticut Health Department's guidelines for immunization and disease control.

International Services

Carol Murphy, director

The university has a large and active international student program with more than five hundred students from more than 55 countries. In addition to assisting students with immigration and adjustment problems, International Services assists the International Student Association in coordinating and planning cultural programs.

Meals Plans

David Murphy, manager

The Student Center houses three dining areas: a snack bar in the Charger Café is located on the main floor, and a deli/grill area and a full menu dining commons are located on the ground floor.

Three meal plan options are offered to fit the needs of freshmen boarders and three additional plans are available for apartment and off-campus students. Purchasing a plan, while highly recommended for all students, is required for students living in the freshman residence hall. Meal plan contracts are available at the Dining Services Office.

Minority Student Affairs

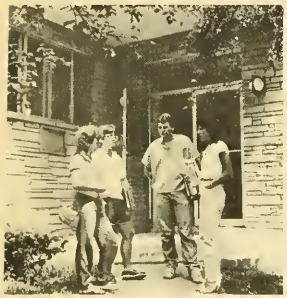
H. Richard Dozier, director

The director of the Minority Student Affairs Office works closely with students, faculty and administrators in developing and implementing educational programs for minority students. The office also provides academic and personal advising for students to assist them in their growth and transition to the various facets of the university's environment.

The Minority Student Affairs Office serves as a catalyst in building a support network between the community at large and UNH. Even though the Minority Student Affairs Office has a special interest in issues of Black, Hispanic, Asian and American Indian students, all students are encouraged to take advantage of the financial, academic and personal advising. In addition, all students are also encouraged to participate in the various educational, social and cultural programs.

Residential Life

Rebecca D. Johnson, associate dean for resident services



The character of residential living is often a good indication of the spirit and life on campus. For this reason the University of New Haven strives to make its residential facilities places which encourage academic pursuits, creativity and personal development.

On-campus university housing includes a suite-style residence hall for freshmen, with double bedrooms arranged in groups of six around a common living room and bath. Apartment-style residence halls are available for upperclassmen. All on-campus residences are furnished and include lounges and laundry facilities. Resident staff members and an active council of students work to promote an atmosphere conducive for study and social development in each hall. University housing is occupied generally on an academic year basis. Students who are permanent residents of New Haven County may apply for housing only with the special permission of the director of residential life.

All students living in the freshman Residence Hall are required to purchase a university meal plan; cooking is not allowed. Students in the upperclassmen residences have the option of taking a meal plan or providing for their own meals or a combination of both.

The Office of Residential Life maintains a listing of available off-campus housing. Because of the limited number of off-campus apartments available in the immediate area, the university is unable to guarantee off-campus accommodations. While university staff will be happy to discuss and advise students undertaking a lease with an off-campus landlord, the university cannot take responsibility for that lease. Students are responsible for any contract undertaken for housing and should carefully consider the nature of that contract and the responsibilities incurred.

Student Center

The Student Center provides a focal point for all student activities. Offering lounges, student offices, a game room, a large cafeteria and a snack bar, the facility has been designed to serve as a center for the student's non-academic college interests.

The Charger Café, also located in the Student Center, opens daily at 4 p.m. serving snacks and beverages. Live entertainment and films are often presented in the café on weeknights.

Veterans' Affairs

Karen Monteith, veterans counselor

The university maintains an Office of Veterans' Affairs with a full-time staff member. Liaison with state and local veterans organizations is maintained on a daily basis. The campus veterans' office provides a wide range of support services for veterans attending the university. Assistance is available in academic areas and special help such as funding for tutorial assistance.

WNHU Radio

Rose Majestic, general manager

WNHU, the university's student-operated FM stereo broadcast facility, operates throughout the year on a frequency of 88.7 MHz at a power of 1,700 watts. This extracurricular activity, open to all undergraduate or graduate students, serves southern Connecticut and eastern Long Island with the best in music, news and community affairs programming. The WNHU broadcast day consists of locally produced shows as well as various programs provided by several public networks.

Most WNHU activities in programming, business and engineering operations are performed by students in the university's day, evening and graduate division. The station will train all qualified students in their respective areas of interest.

Women's Affairs

Supported by a number of women faculty and administrators with the help of interested students, Women's Affairs coordinates a variety of programs of special interest to women.

Some of the innovative programs which have been developed include the Women's Health Center, programs targeted to the returning adult woman student, a mentor program for freshmen women, and women's studies course offerings.

Further details are available at the Dean of Students office.

ADMISSION AND REGISTRATION

Robert Caruso, dean of admission services
Laurie G. Saunders, director of undergraduate admission

The University of New Haven welcomes applications from men and women of all races, economic levels, religions and geographic areas.

Students wishing to take any course in the university, whether or not they seek a degree, must first satisfy the admission requirements and follow the admission procedures specified below. In general, all applicants must have graduated from an accredited secondary school or passed the state high school equivalency examination to be considered for admission.

Students should note that the different schools of the university may have additional admission requirements which are discussed in detail in subsequent pages of this catalog.

You become a student of the University of New Haven only after you have completed the steps listed below under Admission Procedure, completed all financial aid arrangements, selected and registered for courses for your first semester, and made the appropriate tuition and fee payments.

Admission Procedure - Day Division

1. Write or telephone the university for information or to arrange for an interview. Telephone (area code 203) 932-7319.
2. Secure an application form from the Admissions Office of the university or from your high school guidance counselor.
3. Submit the completed form with the non-refundable application fee.
4. Request your secondary school and/or college to forward an official copy of your academic transcript directly to the Admissions Office. If you are currently attending an educational institution and will be sending us an incomplete transcript, it is your responsibility to send us your final transcript as soon as it becomes available.
5. Arrange for results of Scholastic Aptitude Test (S.A.T.) or American College Testing Program (A.C.T.) examinations to be sent directly to the Admissions Office, or arrange to take the University of New Haven tests by calling the Admissions Office.
6. Make preliminary contact with the Financial Aid Office to discuss possible financial assistance. The application for financial aid has no bearing whatsoever on whether or not a student is accepted to the university.
7. A decision on your application will not be made until we receive: your completed application, your non-refundable application fee, your high school and college (if applicable) transcripts and your admission test scores.
8. The university also requires that all students entering the Day Division provide documentation of their medical and immunization

history. This is done by completing the health form provided by the Admissions Office and returning it to the Health Services Office. The requirement is in compliance with the State of Connecticut Health Department guidelines for immunization and disease control.

Admission Procedure - Evening Division

The procedure for admission to the Evening Division is very similar to the Day Division procedure. It is handled through the Office of the Division of Evening Studies and can often be accomplished in one visit.

The procedure for applying to the Evening Division is as follows:

1. Write or telephone the Evening Division to arrange for an interview. The telephone number is 932-7231.
2. Secure an application and submit the form along with the non-refundable application fee.
3. Request your secondary school and/or previous colleges to forward copies of your official academic transcripts directly to the Evening Division.
4. Arrange to take the University of New Haven placement examinations in English comprehension and mathematics. Placement test results are used for registration purposes.
5. A decision on your application will not be made until we receive: your completed application, your non-refundable application fee, and your high school and college (if applicable) transcripts.

Please see the Division of Evening Studies section of this publication for more detailed information.

Admission Procedure - International Students

The university admits international students for both fall and spring semesters. Official academic transcripts from all institutions previously attended, including secondary school, must accompany the admission application. Proficiency in English must be demonstrated. Freshman applicants must submit official reports of TOEFL scores. Students who have been educated in English-speaking systems may substitute the SAT or ACT for the TOEFL. Depending on their academic background, students transferring from accredited institutions within the United States may also be required to submit TOEFL scores.

Academically qualified international applicants who do not meet the English language proficiency requirement (normal guidelines are 500 TOEFL or 80 MTELP) may elect be evaluated and, if necessary, to study English at the ELS Center in Bridgeport, Connecticut. Completion of the ELS Language Center program (Level 109) is required to satisfy the English language requirement at this university. Students wishing to take advantage of this opportunity to improve the level of their English competency will receive a letter of conditional acceptance to the university contingent upon successful completion of the ELS program. An I-20 document will also be issued for the purpose of evaluation and, if necessary, study at ELS **and** matriculation at the University of New Haven.

Conditional Admission

There are a limited number of openings in the Day Division of the university for students who appear to have potential for academic success that has not been readily demonstrated. At the discretion of the director of admission, such students may be granted conditional admission to the university.

Some students may be required to take certain courses designed to strengthen their foundation in basic skills and prepare them for regular college courses. See the developmental studies program on page 27 for more information.

Deferred Enrollment

A student who is offered admission to the University of New Haven may choose to defer enrollment for up to one full year from the originally intended semester of entrance. A student many not enroll in college level courses at another college or university during this time period. Students must notify the Admissions Office in writing prior to the beginning of the semester for which they were accepted if they intend to defer their enrollment.

Placement

Incoming students are placed in courses in English and mathematics according to their individual abilities as demonstrated through the university testing program, S.A.T. scores and high school or previous college records.

Some introductory mathematics and English courses include placement tests during the first week of school to ensure that students have been placed in courses consistent with their abilities.

Some students may be placed in courses designed to upgrade their skills in particular subject areas and prepare them for more advanced courses at the university.

Registration

Joseph Macionus, university registrar

Registration is the process of selecting classes each term. Registration includes faculty advising, a preliminary choice of classes (preregistration) and fee payment. Final registration is not complete without these steps.

Students have assigned faculty advisers who provide guidance on academic matters and help the students with the registration process. Normally, the adviser is the chairman or coordinator of the student's major course of study or another faculty member designated by the chairman.

There are two parts to registration: the completion of the registration forms and the payment of tuition. There is a penalty fee for delaying either of these two processes beyond the end of the registration period.

Registration dates and procedures for currently enrolled day students will be posted in advance. New students will receive registration procedures by mail. New students must register in person. A separate registration is required for each of the semesters, for summer sessions and for the winter intersession.

Social security numbers will be used on student records; students should be sure to bring their number when registering. Prospective students who do not have a social security number should apply for one before registration. Students from other countries who do not have social security numbers will be given a temporary number by the university; however, they are encouraged to apply for a social security number as soon as possible.

Students are urged to plan their programs carefully before completing the registration forms in order to avoid the need for requesting changes. Once the registration is completed, students are charged the change of registration fee for each change made. The fee is payable upon completion of the form requesting the change.

Please Note: No new full-time day student will be permitted to register for classes until:

1. The non-refundable acceptance fee has been paid.
2. Tuition **in full** for the semester has been received. Students relying on financial aid to cover all or part of a semester's expenses must present evidence of the amount of money awarded.

No new part-time evening student will be allowed to register for classes until tuition payment or financial aid arrangement have been made.

Course Overload Restrictions: Day Students

Day students who wish to register for more than 15 semester hours in any one semester must follow special procedures and guidelines.

If the total number of semester hours to be attempted is from 16 to 19 and is in excess of the hours specified on the student's work sheet, the student must obtain written permission from his or her adviser and department chairman and, in most instances, must have a cumulative quality point ratio of 3.20 or higher.

If the total number of semester hours to be attempted is more than 19, the student must obtain written permission from his or her adviser and department chairman, academic dean, and the Provost's Office. Such students are required to have a cumulative quality point ratio of 3.20 or higher.

Course Overload Restrictions: Evening & Southeastern Connecticut Students

Evening and southeastern Connecticut students are restricted to a maximum of 11 credit hours in any given term or semester including the combined sessions of summer school.

Students wishing to take more than 11 credit hours per term or semester, must complete the Internal Transfer Form in order to change student status to that of a full time day student. Day Division tuition rates would then apply.

In some limited circumstances, evening or southeastern Connecticut students nearing graduation may be allowed to exceed the 11 credit hour per term policy. Only students who satisfy the following criteria will be eligible.

1. 12 or more credit hours must be needed for graduation and successful completion of the registered courses would enable graduation.
2. Only courses required for graduation are included.
3. Only Evening Division courses are being taken, unless a given course is unavailable in the evening.
4. Evening Division status was continuously maintained during the previous semester.

Students must apply for this credit overload by obtaining the appropriate form from the Evening Division and securing the approval of the department chairman and the dean of the School of Professional Studies and Continuing Education.

ACADEMIC REGULATIONS

Ways of Earning Credit

Academic Credit
Transfer of Credit to the University
Courses Available at Other Colleges
Coordinated Course
Advanced Placement
Crediting Examinations
Advanced Study
Independent Study

Academic Status and Progress

Full-time Students
Part-time Students
Matriculation
Class
Transfer of Student Status
Minor
Grading System
Grade Reports
Quality Point Ratio
Satisfactory Progress
Dean's List
Probation and Dismissal
Repetition of Work
Dismissal/Readmission Procedure
Readmission

Changes

Dropping/Adding a Class
Withdrawal from a Class
Changing a Major
Leave of Absence
Withdrawal from the University
Transfer of Credit from the University

General Policies

Academic Honesty
Attendance Regulations
Make-up Policy

Graduation

Graduation Criteria
Residency Requirements
Writing Proficiency Examination
Honors

Ways of Earning Credit

Academic Credit

Academic credit is granted on a credit hour basis. In addition to successfully completing regular courses, students may earn credit by taking independent study, coordinated courses, crediting exams or CLEP exams or by transferring previously awarded credit from other institutions. These methods are detailed in the Academic Regulations section.

Transfer of Credit to the University

Students may transfer to the university after completing academic work at other institutions. Applications should be made to the director of admissions. If feasible, potential transfer students should visit the university and discuss their transfer credit situation with the chairman or dean administering the curriculum of interest. Normally, the university accepts credit from regionally or nationally accredited colleges on an equivalency basis.

Students transferring from another institution must possess at least a 2.00 quality point ratio based on a four point scale. Credit is normally granted for those courses completed with at least a grade of C, or its equivalent. Credit transferred from a two-year institution is generally limited to 60 credit hours, unless otherwise approved in writing by the dean of the school in which the student seeks to enroll.

Final decisions on transfer credit are made by department chairmen and must conform to school and university policies. Credit is not awarded officially until the student has completed at least 12 credits in good standing at UNH. Prospective students may be required to take qualifying or placement examinations for specific courses.

Plans of study for a University of New Haven degree should be agreed upon by both the transfer student and the department early in the first term of attendance in order to avoid course duplication and academic discontinuity.

For Transfer of Student Status, see page 42.

Courses Available at Other Colleges

University of New Haven students interested in taking courses at other colleges and universities should discuss this matter directly with their departments and consult the statement of policy established by the undergraduate school in which they are enrolled.

Coordinated Course

In order to maintain continuity in a degree program, students are encouraged to use UNH Summer Sessions and Winter Intersession; however courses taken by matriculated UNH students at regionally or nationally accredited institutions may be designated as "coordinated courses." Credit for such courses is accepted and posted on the students' permanent records and the grades are included in the students' quality point ratios.

Prior authorization for a "coordinated course" designation must be obtained from both the departments housing the student's major and the analogous course at UNH. The appropriate form must be obtained at the Registrar's Office, approved, and returned to that office before the course in question begins. Normally, approval is only granted for those courses which are analogous to courses offered at UNH and/or are standard courses in a given discipline and which are unavailable at UNH because of frequency offerings, cancellation, etc., or inaccessible to the student because of temporary residency at a distant location. Students must be continuously matriculated at UNH while taking a coordinated course.

Advanced Placement

The university recognizes the program of advanced placement available to talented high school students and operated by the College Entrance Examination Board. Students satisfactorily completing advanced placement courses in high school and the final examination prepared by the Educational Testing Service (E.T.S.) may be given appropriate college credit if their courses are similar to those offered at the University of New Haven.

Educational Testing Services Advanced Placement examinations are graded from 1 to 5. Credit is allowed where the grade earned is 3, 4 or 5. Students desiring to submit advanced placement courses for college credit should have all results of these courses and tests sent in with their application to the Admissions Office.

The University of New Haven accepts credit by examination from the College Level Examination Program (CLEP). The passing percentile for CLEP and subject examinations is 50. Credit will be evaluated by the appropriate department chairman.

Crediting Examinations

A student who has at least a 2.00 cumulative QPR and has independent knowledge of the content of an undergraduate course offered by the university may, with the approval of the respective department chairman and dean, take a special crediting examination in lieu of taking the course.

Students are reminded that they must earn at least 30 semester hours through regular course work if they are to meet the residency requirements for graduation.

Students may not take crediting examinations during the first or last semesters in which they are enrolled.

Students should contact the Evening Division for latest developments in alternative credit routes for adults.

Advanced Study

Advanced study courses are offered to qualified students in the departments offering the degrees of bachelor of science or bachelor of arts. These courses may include a thesis, tutorial work or independent study which permits the student to work intensively in areas of special interest.

Independent Study

In all courses of independent study, including internships, case studies, reading programs, practica, theses and work-study experiences, the student and an adviser must jointly file a project outline with the registrar within four weeks of the beginning of the course. This outline shall serve as the basis for determining satisfactory completion of course requirements. In the case of intensive or condensed course work, project outlines must be filed at least one week prior to the last day of the session.

Normally, independent study is restricted to no more than six credits and only open to seniors, juniors and exceptionally qualified sophomores. Students must have at least a 3.0 quality point ratio.

Regularly scheduled courses, that is, those offered at least once every four semesters, are not normally acceptable as independent study.

Students should contact the Evening Division for new developments in alternative forms of independent study.

Academic Status and Progress

Full-time Students

Full-time student status is attained by registering for a minimum of 12 charge credits per semester, or equivalent term, on either a matriculated or non-matriculated basis. Such status is continued to a succeeding term provided a minimum of 12 credits are completed in the term of record. Completion is defined as receipt of a letter grade of **A, B, C, D, F, S** or **U**; other letter grades do not signify course completion.

Full-time students are eligible for all daytime student activities and benefits, and are subject to Day Division tuition charges and other relevant fees. It is assumed that full-time students will select the great majority, if not all, of their courses from Day Division schedules, unless needed courses are unavailable in the Day Division.

Part-time Students

Students who register for two of 11 charge credits during a semester maintain part-time status. Part-time status may be held in either the day division or the evening division.

Matriculation

Matriculation is the formal act of registering to study for a specific degree offered by the university. Matriculation is, therefore, not automatic. A student must request matriculation by seeking admission to a specific university degree program. Formal acceptance into a degree program shall constitute the granting of matriculation.

Students seeking credit to be transferred to another institution, or who wish simply to audit courses or to take them without working toward a degree, need not matriculate. Non-matriculated students must register to take their chosen courses, however, and will be allowed to enroll in courses only as space permits. It is the student's responsiblity to seek matriculation should he or she later decide to pursue a University of New Haven degree.

Class

In order to be classified as a sophomore, a student must have completed 27 credit hours in an approved program; a junior, 57 credit hours; a senior, 87 credit hours; a fifth-year student, 117 credit hours.

Transfer of Student Status

Undergraduate students are able to change their student status according to the following procedure:

Day to Evening Transfer. Full-time day students who wish to become part-time evening students may do so by obtaining the Internal Transfer Form in the Registrar's Office. Upon approval, this form is then brought to the Evening Division for processing and registration of courses.

Please note: Evening students are restricted to taking courses in the evening unless they are unavailable and may not exceed 11 credit hours per term.

Evening to Day Transfer. Part-time evening students who desire to take more than 11 credit hours per term must become full-time day students. This process requires the student to obtain the Internal Transfer Form from the Evening Division. Upon approval, the form is then brought to the Registrar's Office for processing and registration of courses.

Minor

Most academic programs have an associated minor program, which normally includes five to seven courses. The university encourages students to augment their major program with an associated minor. Details can be obtained from the appropriate department.

Grading System

The following grading system is in use and, except where otherwise specified, applies both to examinations and to term work. The weight of a final examination grade is a matter individually determined by each instructor. See Quality Point Ratio section following for additional information.

A — Superior
B — Good
C — Fair
D — Lowest passing grade.
F — Failure or withdrawal after the first half of the semester with unsatisfactory work.
I — Incomplete. Indicates one of the following two possibilities:
1. Some work remains to be completed to gain academic credit for the course. An **I** is assigned in the first instance at the discretion of the instructor. This assignment shall not be automatic but shall be based upon an evaluation of the student's work completed up to that point and an assessment of the student's ability to complete course requirements within the allowed time limit. Work to remove an **I** must be performed within the 12 months following the last day of the semester in which the **I** is incurred. When such work is completed, the instructor will assign a final grade for the course.
2. The student has failed to complete unfulfilled academic assignments within the specified twelve months, and the grade of **I** has been entered on the student's permanent transcript. **No further opportunity to complete the course will be available to the student after this time.**

W — Withdrawal. Indicates withdrawal from the course after the first half of the semester with satisfactory work in the course up to the time of withdrawal, or withdrawal from the university after the twelfth week of classes. The grade of **W** will not be assigned to any student who has taken the final examination in the course.
S — Satisfactory. Given only in non-credit courses.
U — Unsatisfactory. Given only in non-credit courses.

Grade Reports

Reports of the final grade in each subject will be mailed to the student soon after the close of each semester. The university will release grades to a student's employer upon request, but only if the student has given prior authorization.

Quality Point Ratio

The academic standing of each student is determined on the basis of the quality point ratio earned each semester. The quality point ratio is determined by using the quality points assigned to each student's grade.

To determine the total number of quality points earned during a semester, each letter grade is assigned a quality point value:

A — four quality points
B — three quality points
C — two quality points
D — one quality point
F — zero quality points
I — zero quality points
W— zero quality points
S — zero quality points
U — zero quality points

The quality point value for each grade earned during a semester is multiplied by the number of credit hours assigned to that course as listed elsewhere in this catalog. The sum of these points is the total number of quality points earned during the semester.

This sum is divided by the number of credit hours completed (hours from courses with grades of **A**, **B**, **C**, **D**, **F**, S or **U**) to obtain the quality point ratio.

The cumulative quality point ratio is obtained by calculating the quality point ratio for all courses attempted at the University of New Haven.

See the previous "Grading System" section for more information.

Satisfactory Progress

For a student matriculated in the Day Division, satisfactory progress toward a degree is defined as successful completion of 24 credits applicable to that degree program during an academic year. This should include registration for at least 12 credits per semester and successful completion of at least nine credits per semester. "Completion" is defined as the receipt of a final letter grade (**A** to **F**) but not the receipt of a Withdrawal (**W**) or an Incomplete (**I**). "Successful completion" is defined as the receipt of a passing letter grade (**A** to **D**). Decisions on student status are made by the university registrar.

Students are required to maintain a minimum cumulative quality point ratio in accordance with the following scale:

Quality point ratio of 1.50 for 3 to 30 credit hours attempted
Quality point ratio of 1.60 for 31 to 45 credit hours attempted
Quality point ratio of 1.70 for 46 to 60 credit hours attempted
Quality point ratio of 1.80 for 61 to 75 credit hours attempted
Quality point ratio of 1.90 for 76 to 90 credit hours attempted
Quality point ratio of 2.00 for 91 or more credit hours attempted

Appeals involving extenuating circumstances may be addressed to the chairman of the Faculty Senate for resolution by appropriate Faculty Senate committees.

Dean's List

The dean's list honors students who demonstrate excellence in their academic performance. Full-time students who earn a quality point ratio (QPR) of 3.50 or better in any one semester will be appointed to the dean's list for that semester.

Part-time students who have accumulated a minimum of 14 credit hours of course work at the university will automatically be considered for the dean's list at the end of each semester. A cumulative quality point ratio of 3.50 or better is required.

Probation and Dismissal

Failure to maintain satisfactory progress as defined below will place students on academic probation for the following semester of enrollment. Students are automatically dismissed when they receive a third probation or when their quality point ratio for any one semester is less than 1.0.

First-semester freshmen earning a quality point ratio less than 1.0 are automatically referred to the Academic Standing and Admissions Committee which may specify conditions for continued enrollment. A record of committee action shall appear on the student's permanent record. Committee decisions are normally viewed as final, but may be appealed by following the process indicated in the section on Dismissal/Readmission Procedure.

Students who fail to maintain the minimum QPR for satisfactory progress, but are not dismissed, are placed on academic probation. Probation serves as a warning that lack of improvement will eventually prevent satisfaction of graduation requirements. Because UNH is very concerned that probationary students become successful, counselors are assigned to assist such students.

Academic probation of transfer students is determined in accordance with the same, graduated, minimum cumulative quality point ratio scale as for non-transfer students detailed above. In determining a transfer student's academic standing, the student's total semester hours completed—those received at other colleges plus those received at the University of New Haven—are applied to the minimum cumulative quality point ratio scale.

Repetition of Work

A course which a student has completed may be repeated only with the consent of the chairman of the department in which the course is listed. If a student achieves a higher grade in the second attempt, that grade rather than the first will be used to compute the cumulative quality point ratio. However, both the higher and lower grades in the course remain in the student's permanent record.

Dismissal/Readmission Procedure

Students are dismissed from the university at the end of each semester or trimester on the basis of the criteria listed in "Probation and Dismissal." Notification is made by the Provost via registered letter. This letter will specify the time span for appeal (normally five days) and the criteria for appeal.

An appeal will be heard by the Academic Standing and Admissions Committee. If the appeal has merit and is granted, the student will be so notified by the Provost. The committee may require special arrangements or conditions to allow the student to continue. Satisfaction of such conditions would be a priority obligation for the student.

If there is no appeal or if an appeal is denied, the student will be removed from any pertinent class rolls and will be prohibited from taking any courses at UNH for at least one semester or trimester. Dismissal action will be noted on the student's academic transcript.

At the end of the dismissal period, the student may apply for readmission through the appropriate admission office. Refer to the section on "Readmission" below.

Readmission

Application for readmission after students have been dismissed normally will be considered only after the lapse of a semester and only when students provide evidence which indicates probable success if readmitted.

Unusual circumstances may permit earlier application if a student's dean and department chairman successfully petition the Academic Standing and Admissions Committee to review the applicant's case.

Requests for readmission should be submitted in writing to the director of admission for transfer to the chairman of the Academic Standing and Admissions Committee at least three weeks before the opening of the semester, and should include evidence supporting the student's belief that he or she will succeed if readmitted.

A student who has been absent from the university for one or more semesters must submit a new application and pay another application fee. If the student has attended another college or university an official academic transcript is required from that institution. Following the receipt of the above material, action will be taken on the application for readmission. Since the student is not matriculated at UNH during this period, no coordinated courses will be accepted.

Readmission is not automatic. The Academic Standing and Admissions Committee reviews each application and makes a decision on acceptance, rejection or conditional acceptance of students.

Changes

Dropping/Adding a Class

Students who wish to make a change in class schedule must complete a "Drop Slip" or an "Add Slip" or both. These are available from the Registrar's Office. All "Adds" require approval of the instructor and the student's adviser. A fee will be charged for adding courses after the announced deadline.

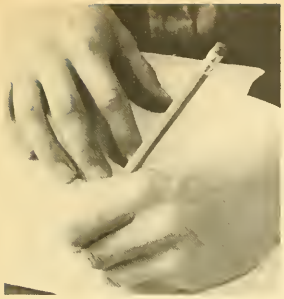
The last date to add classes is one week into the semester, and is listed in the academic calendar. No classes may be added after this date without special approval from the instructor, the department and the dean. All changes should be completed prior to the second week of class so that students may be properly registered in the correct sections.

Withdrawal from a Class

Students desiring to **withdraw formally from a class** may do so before the last day to drop courses published in the academic calendar. Formal withdrawal removes the student's name from class roll and removes the course listing from the student's record and transcript. The student must obtain a "Drop" card from the Registrar's Office, complete it and sign it. Signatures of the instructor and the student's academic adviser must be obtained. The card is then returned to the Registrar's Office.

Students withdrawing from a class after the last day to drop courses will receive either a grade of **W** or **F**. The grade assigned by the instructor will depend on whether or not the student's work in the course has been satisfactory up to the time of withdrawal. If a grade of **W** is assigned, it will appear with the course name on the student's record and transcript.

Filing a "Drop" slip does not qualify the student for cancellation of any university tuition or fee.



Changing a Major

Students wishing to make a change in major or program must meet with the chairman of the department into which they wish to transfer. In consultation with the student, the chairman will prepare a change of major form and forward it to the Registrar's Office.

Leave of Absence

Matriculated students may interrupt continuous enrollment by electing to take a leave of absence from the university. The purposes may be for medical or personal reasons, to pursue a program of study at another insitution or to engage in other off-campus educational experiences without severing their connection with the University of New Haven through withdrawal. Before taking a leave of absence, students are encouraged to discuss their particular situation with an academic adviser, the dean of their school, the dean of student affairs, or a counselor in the Counseling Center.

The rules regarding leaves of absence are:

- All non-international students must file for a leave of absence through the Counseling Center; international students must initiate the leave of absence through the International Services Office.
- The Counseling Center must receive clearance from the Bursar and the Dean of Student Affairs and Services for all leaves of absence.
- Students who are on university disciplinary probation are **not** eligible for a leave of absence.
- A student who has been dropped or dismissed from the university for disciplinary or academic reasons is **not** eligible for a leave of absence until properly reinstated.
- A student who has withdrawn as a degree candidate is **not** eligible for a leave of absence. If a student withdraws while on leave of absence, the leave is invalidated.
- Leaves are not required or granted for summer periods alone.
- Normally, leaves are not approved for a period longer than two semesters. Under special circumstances, a leave of absence may be approved for a maximum of four semesters or two years.
- If a student wishes to return later than the semester originally stated on the leave of absence form, the person must apply for an extension of their leave of absence through the Counseling Center, not to exceed the maximum period as outlined above.
- A student who plans to enroll for course work at another accredited institution during a leave of absence should review program plans with his or her academic department adviser to verify the eligibility for receiving credit at the University of New Haven.
- Taking a leave of absence may affect a student's financial aid. All students receiving financial aid are encouraged to contact the Financial Aid Office before taking a leave of absence.
- A student who fulfills the conditions of an approved leave of absence may return to the university and register for classes without applying for readmission; the student may preregister for the semester in which they plan to return.
- All applications for leaves of absence after the twelfth week of classes must be approved by the Provost's Office before they are considered final.
- For leaves of absence completed **during** the first twelve weeks of the semester, the student's transcript will contain no record of courses attempted or grades received during that semester.
- Leaves of absences completed **after** the twelfth week of the semester result in the receipt of the grade of "W" for all courses in which the student is registered at the time of taking the leave of absence.

Withdrawal from the University

Students desiring to **withdraw from the university** must complete the necessary form at the Counseling Center and notify each of their instructors. It is the student's obligation to complete this formal procedure. Failure to do so leaves the student liable for all of the current semester's tuition and fees, and may result in grades of **F** being assigned in the student's courses.

Formal withdrawal must be completed during the first four weeks of the semester in order to obtain any cancellation of tuition and fees (as described in this catalog) unless there are clearly extenuating circumstances and a formal appeal is made through the Counseling Center.

Formal withdrawal which is completed at any time **during** the first twelve weeks of the semester will assure that the student's transcript will contain no record of courses attempted or grades received during that semester.

Formal withdrawal which is completed **after** the twelfth week of the semester will result in the receipt of the grade of **W** for all courses in which the student is registered at the time of withdrawal. Students should note that formal withdrawal after the twelfth week cannot be regarded as complete unless, in addition to the above requirements, it has been approved by the Provost's Office.

Because of the serious ramifications of formal withdrawal from the university, students contemplating this action should discuss the matter with their adviser or a counselor as soon as problems are perceived.

Involuntary Administrative Withdrawal

A student will be subject to involuntary administrative withdrawal from the university, or from university housing, if after evaluation by a Counseling Center or Health Service professional, or their designee, and after a withdrawal hearing, it is determined that the student is suffering from either a physical disorder and/or a mental disorder, and as a result of this disorder:

(a) engages or threatens to engage, in behavior which poses a danger of causing physical harm to themselves or to others or
(b) engages, or threatens to engage, in behavior which would cause significant property damage or directly and substantially impede the lawful activities of others.

These standards do not preclude removal from the university, or university housing, in accordance with provisions of the student judicial system, residence hall occupancy agreement and related rules, regulations and publications of the university.

The procedures which will be followed in the case of an involuntary administrative withdrawal are outlined in the Student Handbook.

Transfer of Credit from the University

Credits may be transferred from the University of New Haven, a fully accredited university, to any other college or university merely by obtaining a letter of authorization from the school to which the transfer of credit is desired.

General Policies

Academic Honesty

Academic dishonesty is not tolerated at the University of New Haven. All students are responsible for reading and understanding the statement on academic honesty in the student handbook.

Violation of university standards for academic honesty, including plagiarism, will be a sufficient reason for an **F** in the course and will be reported to the dean of student affairs and services. A second violation may be cause for expulsion from the university.

Plagiarism is defined as the unacknowledged use of another person's work or the submission of the same work for more than one course without expressed written permission in advance.

Attendance Regulations

Every student is expected to attend all regularly scheduled class sessions. Specific course attendance guidelines are established by the academic departments or each individual faculty member.

From time to time, it may become necessary for the university to compile attendance records for every course in order to meet the needs of regulatory agencies, accrediting bodies or for other purposes.

A maximum of two weeks of absences will be permitted for illness and emergencies. The instructor has the right to dismiss from the course any student who has been absent more than the maximum classes allowed. Please refer to the student handbook for further clarification of attendance requirements.

Make-up Policy

Make-up examinations are a privilege extended to students at the discretion of the instructor, who may grant make-up examinations to those students who miss an examination as the result of a medical problem or a personal emergency. On the other hand, the instructor may simply choose to adopt a "no make-up" policy. If an instructor does choose to offer a make-up test, he/she has two options: 1) to use university proctors, in which case the student must pay a make-up exam fee for regular semester examinations and for final examinations; 2) to make private arrangements to offer the examination, in which case the make-up exam fee is charged at the instructor's discretion.

Graduation

Graduation Criteria

Matriculated students are required to petition the registrar for graduation in the term immediately preceding their anticipated commencement. Forms, schedules and graduation fees are published each term by the Registrar.

Graduation is not automatic. Petitions, once filed, ensure that a student's record will be formally assessed in terms of degree requirements, and that it will be submitted to the faculty and the Board of Governors for final approval. A petition may be denied by the Registrar if graduation requirements are not met. If a petition is approved, a degree will be awarded at the appropriate commencement.

A degree will be conferred by the Board of Governors when a student has satisfied all program requirements and has met the following university requirements:

1. successfully petitioned the registrar and paid all graduation fees;
2. earned a cumulative quality point ratio of no less than 2.0 in all courses applicable toward the degree.

3. earned a cumulative quality point ratio of no less than 2.0 (or higher if required by individual department) in all courses in the student's major field of study;
4. passed the university's Writing Proficiency Test;
5. been recommended by the faculty;
6. met all financial and other obligations and conformed to any local, state or federal law concerning graduation, and;
7. met the residency requirements of the university.

Residency Requirements

The residency requirements of the university is 30 credit hours taken at West Haven or at one of the university's off-campus centers. This requirement applies to all degrees, undergraduate and graduate.

To ensure depth of study, the residency requirement must include 12 credit hours of work in the declared major for an associate degree, and 18 credit hours for a bachelor's degree. Exceptions may be granted only by the dean administrating the major.

Writing Proficiency Examination

Because the University of New Haven believes that good writing skills are essential for success, it requires all its undergraduate students to demonstrate such skills before it will confer a bachelor's degree.

Beginning with the Fall 1986 semester, all entering baccalaureate students, transfer as well as freshmen, must pass the University Writing Proficiency Examination as a requirement for graduation. No student will be eligible to receive the B.A. or B.S. degree unless this examination is passed. All students must take this examination during the first semester after the completion of 57 credit hours. Failure to take the examination may preclude continuous registration.

The examination will consist of the writing of an impromptu theme on one of several topics of current interest. If the student's syntax, punctuation, and diction are in accord with the conventions of standard English and if the argument or exposition is clear and cohernent, he or she will pass. If the student's writing is found to be deficient in these respects, notice of the unsatisfactory performance on the examination will be sent to the student and to his or her academic adviser.

Students who fail the examination must take it again each subsequent semester in which they are enrolled until the examination is passed. Those who fail are encouraged: 1) to enroll in E250, Expository Writing; or 2) to utilize the services of the Center for Learning Resources; or 3) to do both, to help them to improve their writing proficiency. Passing E250 and/or utilizing the Center of Learning Resources does *not* satisfy the University writing proficiency requirement. In no case shall the requirements for a four-year degree be completed unless the Writing Proficiency Examination has been passed.

Honors

Honors may be conferred upon candidates for graduation according to the following standards:

1. An associate degree **With Honors** is awarded to students who have a quality point ratio of 3.25 for the credit hours specifically required for the degree program from which they are being graduated and who have taken 30 or more hours of required work at this university.
2. An associate degree **With High Honors** is awarded to students who have a quality point ratio of 3.50 for the credit hours specifically required for the degree program from which they are being graduated and who have taken 30 or more hours of required work at this university.
3. The bachelor's degree **Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.50, who have taken 60 or more credit hours of required work at UNH and who have completed all the suggested courses within their curriculum.
4. The bachelor's degree **Magna Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.70, whose quality point ratio in all courses counting toward their major is at least 3.70, who have taken 60 or more credit hours of required work at UNH, and who have completed all the suggested courses within their curriculum.
5. The bachelor's degree **Summa Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.90, whose quality point ratio in all courses counting toward their major is at least 3.90, who have taken 60 or more credit hours of required work at UNH, and who have completed all the suggested courses within their curriculum.

In determining eligibility for degrees with honor transfer credit, credits earned by crediting examination and electives in excess of those required will not be considered. Only the cumulative quality point ratio for courses completed at the University of New Haven is considered in determining a student's eligibility for honors.

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TUITION, FEES AND EXPENSES

The tuition and other expenses listed in this section reflect the charges for the 1985-86 academic year. The tuition charges for the 1986-87 academic years are expected to be higher than the charges listed in this section.

Day Division students taking courses offered during the evening will still pay the Day Division tuition rate for the first 18 credits per semester. Evening Division students may take one course offered during the day at the Evening Division tuition rate.

Undergraduate Day Division 1985-86

Application Fee $25

Payable with student's application to the university.

Acceptance Fee $50

Payable by all new students (incoming freshmen, transfer and former students) upon notification of acceptance, not refundable.

International Students Fee $200

Tuition, 1985-86, Full-time Students	**Per Semester**	**Per Year**
Full-time students taking 12-18 credit hours.	$2,945	$5,890
Students taking fewer than 12 credit hours, tuition per credit hour, $194		
Students taking 19 or more credit hours, additional tuition for each credit hour over 18, $130		
Student Activity Fee	$ 55	$ 110
Total tuition and fees	**$3,000**	**$6,000**

Note: The student activity fee is distributed by the Day Student Government and covers the cost of student-supported services such as the newspaper and radio station and helps defray the expenses of clubs, organizations, social activities, etc.

Registration Late Fee $25

Late Payment Fees

Assessed for failure to complete payment of tuition, meal plan or residence charge by due date listed on academic calendar in this catalog. $35

Additional fee for failure to complete payment of tuition, meal plan or resident charges by the first day of classes. $15

Additional fee of 1½ percent per month on the unpaid balance after the first day of classes.

Undergraduate Evening Division 1985-86

Application Fee
Payable with the student's application to the university, not refundable. $10

Tuition, 1985-86
Evening students taking up to 11 credit hours, per credit hour. $130

Tuition Late Fee
Fifty percent of the tuition for an Evening Division student is due when registering, the other 50 percent due by the first day of class. After this, the student must pay 1½ percent per month on the unpaid balance. $25

Tuition for Summer Session and Winter Intersession
All students, both day and evening, pay per credit hour for summer session and winter intersession courses. $130

Tuition, UNH in Southeastern Connecticut
Students at UNH in Southeastern Connecticut are part of the Evening Division and pay per credit hour. $130

Other Fees

Change of Registration Fee
Assessed for each course or section addition after the completion of registration. $5

Laboratory Fees
Payable each semester by students registering for courses requiring the laboratory fee as listed in the catalog. Non-refundable fees are announced in printed course schedules in advance of each semester.

Computer Use Fee
Dependent upon amount of use, a fee will be charged for computer use to students who are not enrolled in a computer laboratory course. $15-90

Make-up Test
Assessed when a student is permitted to make up an announced test. $7

Make-up Examination
Assessed when a student is permitted to take an end-of-semester examination at a time other than the scheduled time, except for conflicts caused by the examination schedule. $10

Co-op Program
Students participating in the university's Cooperative Education program pay a continuing registration fee for semesters during which they work. $100

Crediting Exam
Assessed when a student is permitted to take crediting examination for a 3-credit course. $100

Auditing a Course
Students pay the same tuition and fees for auditing a course as they pay when the course is taken for credit.

Graduation
Assessed regardless of participation in exercises; no reduction will be made for non-attendance. For graduation in June, the fee and graduation petition are due no later than March 1 of the

year of graduation; for January commencement, the fee and graduation petition are due before October 15 of the prior calendar year. Failure to meet the deadline date will result in a late charge of $25 in addition to the normal graduation fee, to be paid if there is sufficient time to process the graduation petition. If processing is not possible, graduation will be postponed to the next award date. $35

Graduation refiling/diploma replacement fee

This fee is paid to the university to refile for graduation if the student petitioned and failed to complete the requirements prior to the expected graduation date *or* the fee is paid to the university to replace a lost or damaged diploma. $15

Transcript of Academic Work

No charge for first copy; thereafter, per copy. $4

Payments

Tuition, fees and other charges are payable when due. Checks or money orders should be made payable to the University of New Haven. There is a penalty charge of $7 per check for all checks returned by the payer's bank.

The university withholds all issuance of grades, the awarding of diplomas, the issuance of transcripts, and the granting of honorable dismissal to any student whose account is in arrears.

As a convenience to those who desire to spread their payments out over the period of a semester, a deferred payment bank loan plan is available to full-time students and to part-time students carrying six or more semester hours or the equivalent. Details and forms for this plan are available at the Financial Aid Office.

Application for this plan must be made prior to the first day of each semester.

Adult Student Line of Credit

Under a special agreement with local Connecticut banks, the university, through its Evening Division, subsidizes interest rates for part-time students' tuition charges. Upon credit approval, a "revolving charge" account is established which spreads tuition costs over a 12-month period. The account may be used for all semesters and trimesters, including summers, accumulating charges up to a preset maximum established by the bank. There is no prepayment penalty, and the university contributes seven percent of the interest rate normally charged for similar credit accounts.

Tuition Refund Policy

After a formal withdrawal request is initiated by undergraduate day students at the Counseling Center or through the Evening Division Office for evening students, tuition is refunded or cancelled according to the following scale:

Date of Receipt of Withdrawal Request	Percentage Refund
1st week of semester	80%
2nd week of semester	60%
3rd week of semester	40%
4th week of semester	20%
After the 4th week	0%

A **prorated** refund, rather than a refund based on the above mentioned scale, may be made in situations involving clearly extenuating circumstances such as protracted illness of a student. All

appeals for a prorated refund based on extenuating circumstances must be made in writing and include documentation of the extenuating circumstances. Appeals are to be sent to the Director of Counseling and Health Services; and prorated refunds will be determined by the Committee on Withdrawals. All requests for refunds should be initiated before the close of the semester of withdrawal. Any student under the age of 18 must have the written consent of a parent or guardian indicating to whom any refund, if applicable, is to be paid in order to withdraw from the university.

Summer Sessions and Intersession

In cases of withdrawal from a course or courses within the first week of each term, a refund of 50 percent of tuition is made. There is no refund of summer or intersession tuition after the first week.

The foregoing policy is intended to protect the university, since the university plans its expenses and bases its budget upon full collection of tuition and fees from all registered students, and assumes the obligation of supplying instruction and other services throughout the year.

Changes in Arrangements

The university reserves the right to make, at any time, whatever changes in admission requirements, fees, charges, tuition, instructors, regulations and academic programs it deems necessary prior to the start of any class, term, semester, trimester or session. The university reserves the right to divide, cancel or reschedule classes or programs if enrollment or other factors so require.

FINANCIAL AID

James T. Anderson, director

The University of New Haven offers a comprehensive financial aid program, with students receiving assistance in the form of grants, scholarships, student loans and part-time employment. Funds are available from federal and state governments, private sponsors and from university resources. More than 65 percent of the university's full-time undergraduate students receive some form of financial assistance.

Most financial aid awards are based on an individual applicant's demonstration of need. Some funds are available on a merit-basis for students who have exceptional academic records or athletic ability. Need-based awards are available only to U.S. citizens or eligible non-citizens.

Financial aid award decisions are made after a careful consideration of a student's application for assistance. The Financial Aid Office attempts to consider all aspects of a student's financial circumstances in calculating need and attempts to meet the full need of aid applicants through a "package" of assistance, generally including a combination of grants, loans and employment.

Students interested in applying for financial aid are encouraged to do so as early as possible. Since undergraduates are admitted on a rolling basis, financial aid award decisions for **new students** are also made on a rolling basis up to the beginning of the academic year. Returning, upperclass students must submit application materials no later than April 1st for the fall semester and December 1st for the spring semester. All students are encouraged to apply for aid as early as possible to ensure full consideration for available funds.

The following application materials must be completed and submitted by each financial aid applicant.

- **University of New Haven Financial Aid Application.** The application form must be completed fully, front and back, and submitted to the Finanicial Aid Office. An application form is attached to the back of this catalog.
- **Financial Aid Form.** The principal needs analysis document used in determining need, the FAF, must be filled out and submitted to the College Scholarship Service in Princeton, New Jersey. Applicants must request that the FAF report be sent to the University of New Haven (our code is 3663). FAF forms may be obtained from the Financial Aid Office or any high school guidance office.
- **Tax Documentation.** Applicants must submit **signed** copies of both the student's and parent's complete federal income tax returns from the most recent tax year prior to the academic year. Tax forms must include all pertinent schedules. For those students or parents who did not and will not file a federal tax return for the year in question, a signed Non-Tax Filer's form must be submitted to the Financial Aid Office. The Non-Tax Filer form is available at the Financial Aid Office. Students filing as independents will not be required initially to submit their parent's tax documentation, although they may be requested to do so when their application is reviewed.
- **Financial Aid Transcript.** *Transfer students* must submit a financial aid transcript from all colleges or universities previously attended regardless of whether financial aid was received there. Forms are available in the Financial Aid Office.

- **Citizenship Documentation.** Non-U.S. citizens who apply for need-based financial aid must submit immigration documentation to the Financial Aid Office. Citizenship forms are avilable in the Financial Aid Office.

Other forms and documents may be requested from applicants as their aid applications are reviewed. Upon completion of the review of an application, the Financial Aid Office will notify an applicant of his or her eligibility for financial aid.

Major Aid Programs

Pell Grants—The Pell Grant Program is a federal program providing grant assistance to low income students. Students apply for Pell Grants through the Financial Aid Form (FAF) or through a direct application form available in the Financial Aid Office. Grants for the 1986-87 academic year are expected to range from $200 to $2100 with the student's eligibility being determined by the U.S. Department of Education. Eligible students will receive a Student Aid Report (SAR) from the Pell Grant Processing Center which must be submitted to the Financial Aid Office. Students must be enrolled for a minimum of six credits to be eligible.

Supplemental Educational Opportunity Grant (SEOG)—SEOG is a federal program to provide grant assistance to exceptionally needy students. Students are selected by the university to receive SEOG Grants.

National Direct Student Loans (NDSL)—The NDSL Program is a federal loan program providing up to $1500 per year to needy students. Repayment on NDSL loans begins six months after a recipient leaves school and carries a 5 percent rate of interest commencing with the repayment. Students are selected by the university to receive NDSL loans.

Guaranteed Student Loans (GSL)—The GSL Program is a federal loan program which provides up to $2500 per academic year to students who demonstrate need. Participating banks, credit unions and savings and loans associations lend funds to students, with the loans guaranteed against default by the U.S. Government. Applications are available at banks throughout the United States and at college and university financial aid offices. The current interest rate for new borrowers is 8 percent commencing with the repayment period which begins six months after graduation or withdrawal from college.

Parent Loans for Undergraduate Students (PLUS)—The PLUS Loan Program is a federal program in which parents of dependent students are permitted to apply for up to $3000 per year. The current interest rate for PLUS Loans is 12 percent and repayment begins shortly after disbursement. Application forms and information on this program are available at any participating bank.

UNH/Citytrust Loan Program for Day Students—Credit-worthy students and/or parents may apply for a loan to cover educational expenses from $1,000 to $10,000. Citytrust will evaluate and process loan applications in accordance with its standard underwriting guidelines. If approved, the loan is to be repaid in 12 monthly installments beginning a month after disbursement and will carry an annual interest of 7 percent. For additional information and an application for the loan, contact the UNH Financial Aid Office.

UNH/Citytrust Loan Program for Evening Students—Credit-worthy students (or jointly with parent or spouse) may apply for a loan to cover eductional expenses up to a maximum of $3,000 over a 12-month period. Applications should be submitted to the UNH Evening Division or Southeastern Connecticut offices. If approved, the loan is to be repaid in 12 monthly installments beginning a month after disbursement and will carry an annual interest of 8 percent.

College Work-Study Program (CWSP)—The College Work-Study Program is a federal financial aid program which provides employment opportunities for needy students.

Connecticut Independent College Student Grant Program—Funds provided by the Connecticut General Assembly are awarded to needy Connecticut residents attending the university. Individual grants range up to $3000 per year.

Connecticut Supplemental Grant Program—Grants are available to Connecticut residents attending colleges and universities in Connecticut. Individual awards range up to $1500 per year.

Connecticut Scholastic Achievement Grant Program—Connecticut students who have finished in the top 20 percent of their high school class or who have scored 1100 or greater on their combined Scholastic Achievement Test (SAT) scores may be eligible for the Connecticut Scholastic Achievement Grant. Students must obtain an application from their high school guidance office and send a report of their Financial Aid Form (FAF) to the Connecticut Scholastic Achievement Grant Program (CSS Code #0286).

Family Education Loan Program (FELP)—Sponsored by the Connecticut Higher Education Loan Authority, the FELP Program offers loans from $1000 to $10,000 per academic year to credit-worthy students and/or parents. The loan program is available to all students attending college in Connecticut and does not require state residency. The current interest rate is set at 10.98 percent with a 140-month repayment schedule. Applications can be obtained by phoning the Authority at 1-800-325-3357 (in Connecticut) and 1-203-522-0766 (out-of-state).

University Grants-In-Aid—University grants are made in all divisions on the basis of need.

Presidential Scholarships—Merit-based awards to incoming freshmen and transfer students are made available to selected students each year. A faculty committee selects incoming students for the program based on academic merit, high school records and standardized test scores.

Athletic Grants-In-Aid—Athletic grants are provided to students for participation in sports. Selection for the awards is made by the athletic department based on students athletic ability. Awards can range up to a full tuition, room and board scholarship. Athletic grants are available in the following sports:

Men	Women
Football	Softball
Cross Country	Volleyball
Soccer	Basketball
Basketball	Tennis
Baseball	
Track and Field	

Miscellaneous State Scholarships—Students from selected states are eligible to apply for state scholarships which can be brought to Connecticut for attendance at the University of New Haven. States which permit scholarships to be taken out of state includes Delaware, Maine, Maryland, Massachusetts, New Hampshire, Pennsylvania, Rhode Island, Vermont and the District of Columbia.

Donor Scholarships—Many scholarship awards are available each year through the generosity of business firms, charitable organizations and friends of the university. Scholarship funds are awarded from annual gifts from sponsors and from income from the university's endowments.

Alumni Scholarships—Scholarships are available each year on a need basis for any son or daughter of an alumnus or alumnae of the university.

Amity Charitable Trust Fund—An annual award is made from the income of this fund to a worthy, needy student. Preference is given to students from the greater New Haven area. The fund was made possible through the generosity of the Amity Club.

The Barn Sale Scholarship—A scholarship is available each year for a deserving, upperclass handicapped student. The award is made possible by an endowment established by the Barn Sale, Inc.

Carmel Benevento Memorial Scholarship—This award is made annually to a woman entering the university as a freshman. The award was established in memory of Carmel Benevento and is based on need and academic and creative ability.

C.W. Blakeslee Scholarship—Established by the C.W. Blakeslee Company, this award is made to a deserving, needy student.

Blue Cross/Blue Shield—Joseph F. Duplinsky Scholarship. Two one-half tuition awards are made annually to students majoring in management information systems in the School of Business. The awards are made possible by Blue Cross/Blue Shield of Connecticut, Inc., in honor of Mr. Duplinsky, a former president of the company and an alumnus of the university. Preference is given to upperclassmen who must be Connecticut residents.

Bozzuto Charity Sports Classic Scholarship—Income from this endowment provides for an annual award to a needy student.

H.H. Brown Shoe Company Scholarship—Scholarship is available to a needy junior or senior majoring in business administration or economics.

Burroughs Scholarship for Minority Students Pursuing a Career in the Management Information Systems Industry—An annual award is made to a minority student majoring in electrical engineering, computer science, management, business administration, marketing, accounting, industrial relations or mathematics. The scholarship is made possible by the Burroughs Corporation.

Chesebrough-Ponds Engineering Scholarship—Five $2500 awards are available to engineering students with need. Preference is given to minority students. The scholarships are made possible through the generosity of the Chesebrough-Ponds Company.

Educational Trust Fund of the Connecticut Society of Certified Public Accountants—Junior or senior accounting majors with demonstrated need are selected by the CSCPA for annual awards.

Clarence Dunham Scholarship—A merit-based award is made each year to a deserving student majoring in civil engineering. Selection is made by the faculty of the civil engineering department.

Echlin Family Scholarships—Several annual awards of $2000 are made to needy business or engineering students. The awards are made possible through an endowment established through the generosity of John and Beryl Echlin.

Eder Brothers Scholarships—Annual awards are made to hotel/restaurant management students. The awards are made possible by Eder Brothers, Inc., of West Haven, Connecticut.

Enthone Scholarship—An annual award is made to a needy junior or senior majoring in chemistry or chemical engineering. The award is offered by the ASARCO-Enthone Corporation.

Greater New Haven Consumer Credit Association Scholarship—An annual award is made to a business major from the greater New Haven area. Preference is given to freshmen.

Paul Kane Memorial Scholarship—An award is available each year to an active scholar-athlete with preference to a Hamden, Connecticut, resident. The award is made in memory of Paul Kane, a university alumnus who was killed in the service of his country.

Nathanial Kaplan Memorial Scholarship—An award in memory of Nathanial Kaplan, a former English professor, is made each year to a student who has been enrolled in the School of Arts and Sciences for at least two years. Student must demonstrate need.

Martin Luther King, Jr. Memorial Scholarship—An annual award in honor of Dr. King is made to a deserving, needy student. Preference is given to minority students.

Ahmed Mandour Memorial Scholarship—An award is available each year to a student majoring in economics enrolled in the School of Professional Studies and Continuing Education. The award is made in memory of Dr. Mandour, a former dean at the university.

William T. Morris Foundation Scholarship—Several need-based awards are made to deserving undergraduate students each year through the generosity of the foundation.

National Association of Accountants Scholarship—An award is made available by the NAA to a needy junior accounting major from the greater New Haven area.

Network of Executive Women Scholarship—An annual award is made by the Milford, Connecticut-based organization to a non-traditional woman student.

Virginia M. Parker Scholarship—An award is made each year from this endowed scholarship to a sophomore student.

Marvin K. Peterson Scholarship–CSB Award—An award is made possible from the income of this endowed scholarship which was established in honor of Mr. Peterson, a former president of the university. The endowment was established through the generosity of the Connecticut Savings Bank.

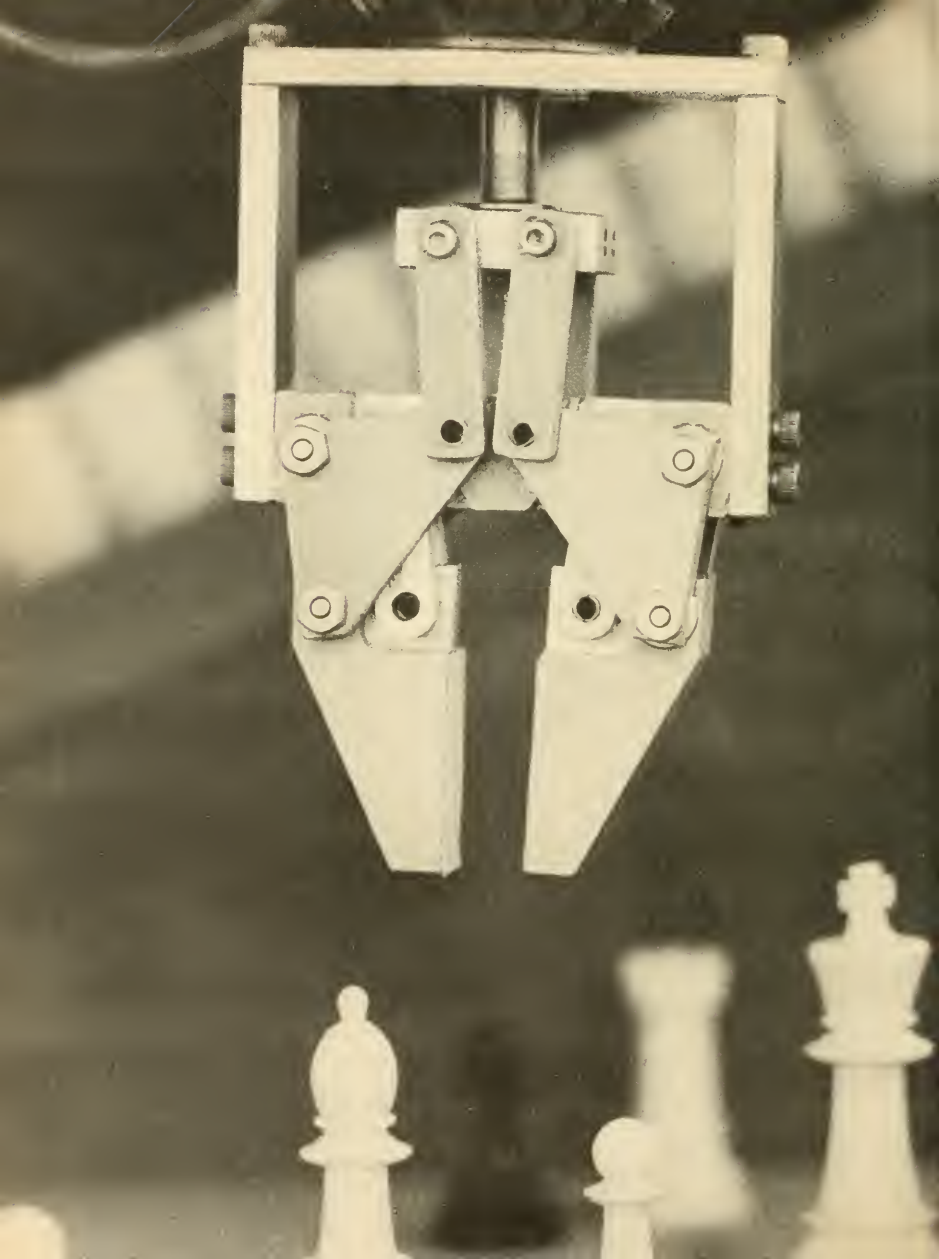
Marvin K. Peterson-Evening Student Council Scholarship—This scholarship was established by the Evening Student Council of the University of New Haven in 1969 to honor the past president, Marvin K. Peterson (1953-1973). The scholarship, awarded to undergraduate evening students, is entirely funded by the Evening Student Council.

The Executive Board of the Evening Student Council carefully screens each application, considering each student based on financial need, quality point ratio (a minimum 3.0 is required), length of time attending the university and other financial aid received by the student.

Eugene J. Rosazza Memorial Scholarship—An award is made each year from the income of this endowment, which was established in memory of Mr. Rosazza, an alumnus of the university.

Southern Connecticut Gas Company Scholarship—A scholarship is made available annually to a needy student from the company's service area in the greater New Haven and Bridgeport areas.

Southern New England Telephone Company Grant to Scholars—SNETCO offers two scholarships each year to needy students from Connecticut.



UNIVERSITY CORE CURRICULUM

The University of New Haven believes that all students studying for a bachelor's degree should develop a common set of skills; furthermore, they should be exposed to a commonality of intellectual experiences which are distinguishing traits of a university graduate. The university's goal is to prepare all graduates for the changing, complex lives they will lead, to focus on the quality of their lives, and to begin the development of the wisdom by which they will frame their lives. This can be done best through a university core curriculum.

The core curriculum encompasses a minimum of eleven courses, totaling 34 credits, grouped into the areas below.

Communication Skills

Clear Reasoning:
- Quantitative Reasoning
- Problem Solving and Synthetic Reasoning (Computers)
- Scientific Method

Dimensions of Our World:
- Laboratory Science
- Social Sciences
- History
- Literature or Philosophy
- Fine Arts or Theater

Plus Depth of Knowledge in at Least One Field: The Major

University Core Curriculum

Credits

Communication Skills 6

The intent of this area is to develop student skills in reading, writing and communicating in the English language. Two courses are required, and should be taken in the freshman year:

E 105 Expository Writing
E 110 Composition & Literature

If a student places out of E105, then CO100 Human Communication or a technical writing course (E 220 or E 225) may be taken.

Clear Reasoning 9

Quantitative Skills

All students must be able to think abstractly and must possess a basis ability to do numerical computations and elementary algebra.

Choose from the following:

M 105	Introductory College Mathematics
M 109	Elementary College Algebra
M 127	Finite Mathematics

or demonstration of an equivalent level of skill. Students may satisfy this requirement by satisfactory performance on a placement test administered by the mathematics department.

Computers

Students should be able to use a computer to meet their needs. They should be able to operate the machinery, bring a program into execution, and use that program to accomplish some useful end.

Students may select one of the following options:

Option A - **one** course from the following:

IE 102	Intro to Programming/FORTRAN
IE 106	Intro to Programming/PASCAL
IE 107	Intro to Data Processing
IE 108	Intro to Programming/BASIC

Option B - One of the following **three-course sequences:**

I	M 127	Finite Mathematics
	M 228	Elementary Statistics
	SO 250	Research Methods
II	M 127	Finite Mathematics
	P 301	Statistics for Behavioral Sciences
	P 305	Experimental Methods in Psychology
III	M 127	Finite Mathematics
	P 301	Statistics for Behavioral Sciences
	SO 250	Research Methods

Scientific Methods

Students should understand the nature of scientific inquiry and study science from a variety of perspectives: as a human activity, as a social institution and as an instrument of acquiring and using knowledge. An interdisciplinary junior-level course has been created to fill this need:

HS 300 The Nature of Science

Dimensions of Our World 16

Laboratory Science

Students should understand the methodology of at least one basic science. One laboratory course satisfies the requirement:

BI 121	General & Human Biology with Lab I
BI 122	General & Human Biology with Lab II
BI 253	Biology for Science Majors with Lab I
BI 254	Biology for Science Majors with Lab II
CH 103 & 104	Introduction to General Chemistry and Lab

CH 107 & 108 Elementary Organic Chemistry and Lab
CH 115 & 117 General Chemistry I and Lab
PH 100 & 105 Introductory Physics, General Physics Lab I
PH 103 & 105 General Physics I and Lab
PH 150 & 150 Mechanics, Heat, and Waves with Laboratory

Social Sciences

Some breadth of understanding of our society is to be acquired by taking a basic course in each of two different social science departments. Acceptable choices are:

P 111 Introduction to Psychology
PS 121 American Government
PS 241 International Relations
PS 280 (SS: 494) Introduction to Comparative Governments
EC 133 Principles of Economics I
EC 134 Principles of Economics II
SO 113 Sociology
SO 221 Cultural Anthropology

History

Early Western civilizations are studied as a basis for understanding our own society:

HS 101 Foundations of the Western World

Literature or Philosophy

Students should acquire some depth of understanding of the human condition and of human endeavor. A sophomore-level course in literature or philosophy is to be selected from:

E 201 Literary Heritage I
E 202 Literary Heritage II
PL 201 Philosophical Methods
PL 213 Contemporary Issues in Philosophy
PL 214 Contemporary Issues in Philosophy
PL 222 Ethics

Fine Arts or Theater

Students should study the methodology, history, practice and content of one of the fine arts. Any one the following is acceptable:

AT 101 Introduction to Studio Art I
AT 231 History of Art I
AT 232 History of Art II
AT 331 Contemporary Art
MU 111 Introduction to Music
MU 112 Introduction to World Music
MU 150 Introcution to Music Theory
MU 211 History of Rock
T 131 Introduction to Theatre
T 132 Theatrical Style
T 141 Early World Drama and Theatre
T 142 Modern World Drama and Theatre: Realism Through Present

The Major

Depth of knowledge in at least one field is crucial to a student's ability to work and live in the twentieth and twenty-first centuries. This is accomplished through choosing and following a major. The combination of a core curriculum, which has flexibility, logic, coherence, and relevance to the modern world, with the specialization of a major field of study represents the university's philosophy of an integrated collegiate education.

Majors are chosen from one of the university's five undergraduate schools: Arts and Sciences; Business; Engineering; Hotel, Restaurant and Tourism Administration; and Professional Studies.

The Odyssey Homer

Joyce Carol Oates

LORD JIM Joseph Conrad

Solomon BEETHOVEN

SCHIRMER BOOKS

Bleak House

BERNARD SHAW: SELECTED PLAYS

MICHEL-ANGELO THE MAN FINLAYSON

PS 2605 A1 1943a

SCHOOL OF ARTS AND SCIENCES

Joseph B. Chepaitis, Ph.D., dean

There is no more significant preparation for careers and lifetime personal development than a liberal education. Recent studies show that such an education prepares college graduates effectively for a career. These graduates are able to adapt to new environments, to think critically and conceptually, to integrate broad ranges of experience, to set goals and develop independence of thought, to seek leadership roles and to possess better overall interpersonal and administrative skills. These studies also reveal that many students educated in the arts and sciences ultimately attain responsible managerial positions because of the job training provided by a liberal education. A practical education, whether for a career or the job of life, is a liberal education.

The ideals of a liberal education are intellectual and imaginative growth, freedom of thought and inquiry and a sense of personal worth. The active pursuit of wisdom, the enrichment of the spirit and the development of each individual as a person offer the world its best hope for the future.

It is the aim of the School of Arts and Sciences to offer students the opportunity for a liberal education which will enrich the mind while it prepares them to pursue their interests and goals. Courses and programs have been designed to appeal to a wide range of interests and to secure the commitment of each student who is seriously engaged in the acquisition of an education.

Education is comprised of many elements, and not all education takes place in the classroom or even on the campus. New Haven is an exciting cultural center which offers libraries, natural history museums, art museums and exhibitions and workshops for dance and the creative arts. A constant procession of speakers and performing artists comes to the New Haven area. Long Wharf Theater is the home of an excellent regional company offering a varied fare of classics and new plays, and the Yale Repertory Theater is innovative and exciting. Programs of old and new films are offered on several college campuses in the area.

Speakers and performing artists are brought to the University of New Haven campus, and a series of concerts is organized by the world music program. The university's library offers comfortable surroundings for study and leisure reading. It has an excellent collection of books, journals, periodicals and phonograph records.

In the School of Arts and Sciences, students are encouraged to pursue as broad-based a program of study as possible.

The School of Arts and Sciences offers programs leading to the bachelor of arts degree, the bachelor of science degree, the associate in science, and a number of certificate programs.

Through the Graduate School, the School of Arts and Sciences offers programs leading to the master of arts degree, the master of science degree and senior professional certificates.

Bachelor of Arts

Art
- Graphic Design
- Interior Design
- Pre-Architecture

Biology
Chemistry
Communication
Economics
English
- Writing Concentration
- Literature Concentration

History
Mathematics
Music & Sound Recording
Physics
Political Science
Psychology
Sociology
Social Welfare
World Music

Bachelor of Science

Applied Mathematics
- Natural Science concentration
- Computer Science concentration

Biology
Biomedical Computing
Biology—Premedical/Preveterinary/Predental
Environmental Science
Music & Sound Recording
Physics

Associate in Science

Biology
Environmental Science
General Studies
Graphic Design
Interior Design
Journalism
Photography

Certificate Program

Art
- Graphic Design
- Interior Design
- Photography

Journalism
Paralegal Studies
Public Policy

Master of Arts

Community Psychology
Gerontology
Humanities
Legal Studies
Industrial/Organizational Psychology

Master of Science
Environmental Science

Senior Professional Certificate
Applications of Psychology

Bachelor's Degrees

The bachelor's degree programs generally require 120 credit hours of study and take four years for full-time day students. Many other University of New Haven students take advantage of the full range of courses offered in the evening and complete their undergraduate degree on a schedule that complements their own careers.

Associate Degrees

The associate degree program is designed to encourage students to begin their college education even though they do not yet want to commit themselves to a full, four-year course of study. Sixty or more credit hours are required for the associate degree, and the credits earned may later apply toward the student's bachelor's degree.

The student wishing to pursue this option is encouraged to consult with the dean of the school or with the chairman in whose department the associate degree program is offered. Students who complete associate degree work may wish to have their credits applied toward further study leading to the bachelor of arts or bachelor of science.

Minors

It is highly recommended that students working toward a degree in one area of study give serious thought to organizing their elective courses so as to receive a minor in a second discipline. A minor usually consists of 18 credit hours devoted to the study of either a group of related subjects or subjects offered by one department.

Students are encouraged to minor in accounting, anthropology, art biology, Black studies, chemistry, communication, criminal justice, economics, English, history, international business, journalism, management, marketing, mathematics, nutrition, physics, political science, psychology, public administration, social welfare, sociology, theatre or world music. Students interested in studying for a minor should consult with the chairperson of the department offering the minor.

Certificate Programs

Students can take their first step toward an undergraduate degree by registering for one of the certificates offered by the School of Arts and Sciences in conjunction with the School of Professional Studies and Continuing Education.

Each certificate program is carefully designed as a concentrated introduction to a particular subject area and generally consists of courses totaling 15 to 18 credit hours.

Later, students may choose to apply the credits they have earned toward their undergraduate degree at the university.

Admission Criteria

An applicant for admission to the School of Arts and Sciences must be a graduate of an approved secondary school or the equivalent. While no set program of high school subjects is prescribed, an applicant must meet the standard of the university in respect to the high school

average. Applicants must present 15 acceptable units of satisfactory work, including nine or more units of college preparatory subjects. Satisfactory scores on College Entrance Examination Board (S.A.T.) or American College Testing (A.C.T.) program tests are required.

University Core Curriculum

In addition to department requirements, students must fulfill all requirements of the core curriculum. See page 67.

A.S., General Studies

The School of Arts and Sciences offers the A.S. in general studies to serve two different student populations. The first is the new or returning student who wishes a general liberal arts education for personal enrichment. The second type of student is the one who is undecided about career objectives and wishes to defer the choice of a major field.

Nearly half of the 60 credit hours required for the degree are free electives. This flexibility permits the student to take courses in a number of different fields prior to choosing a major. By judicious choice of electives, it is possible to transfer into majors in any of the schools in the university.

Students planning to transfer to four-year programs in the School of Arts and Sciences should note additional core requirements in science and mathematics, English literature, fine arts and social science, as well as special requirements in particular major programs.

Required Courses

Students must complete 60 credit hours of courses to earn the associate degree with a general studies major, including the courses listed below:

E 105 Composition
E 110 Composition and Literature
HS 101 Foundations of the Western World

1 mathematics courses (M 105, M 109, or M 127 or higher)
1 scientific methods course (HU 300)
1 literature or philosophy course (E 201 or E 202; PL 205 or PL 206)
1 fine arts, or music, or theater course (AT 231; MU 111; T 131)
1 computer course
1 science course with lab
2 social science courses: Must be from two different departments (economics, political science, psychology, sociology)

Department of Biology, Environmental Studies and General Science

Chairman: Charles L. Vigue, Ph.D.

Professors: Dinwiddie C. Reams, Jr., D. Eng., Yale University; Burton C. Staugaard, Ph.D., University of Connecticut; Henry E. Voegeli, Jr., Ph.D., University of Rhode Island; H. Fessenden Wright, Ph.D., Cornell University

Associate Professors: Charles L. Vigue, Ph.D., North Carolina State University

Practioner-in-residence: Karl E. Tolonen, Ph.D., Yale University

Biology provides one of the cornerstones of a liberal education by increasing the knowledge and appreciation of oneself and of other living organisms in the ecosphere. As a major, biology prepares the student for professional or graduate training or for technical positions in one of the health or life-science fields. The department is well equipped with apparatus ranging from canoes to study aquatic ecosystems to an electron microscope for the study of biological ultra structure.

Because of the close relationship to chemistry, physics, psychology and sociology, biology provides an area for an academic minor concentration for students majoring in these and other disciplines such as business or engineering.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

Honor Society

The University of New Haven has a chapter of Beta Beta Beta, the honor society in biology. Full membership requires an average of 3.0 in biological courses and 3.0 overall. Students majoring in biology with lower grades and those majoring in other areas may affiliate as associate members. The society promotes scholarship, research and intellectual experiences outside the classroom.

Basic Courses Required for Biology Majors

All students earning a bachelor's degree in biology must complete the university's core requirements, the course requirements for their particular biology program, and the basic biology courses listed below:

BI 253 Biology for Science Majors I with Laboratory
BI 254 Biology for Science Majors II with Laboratory
BI 301 Microbiology with Laboratory

BI 303 Histology with Laboratory
BI 308 Cell Physiology with Laboratory
BI 310 Vertebrate Anatomy & Physiology with Laboratory
BI 311 Genetics
BI 461 Biochemistry I with Laboratory
BI 462 Biochemistry II with Laboratory
BI 591 Seminar
BI 592 Seminar
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
CH 201 Organic Chemistry I
CH 202 Organic Chemistry II
CH 203 Organic Chemistry Laboratory I
CH 204 Organic Chemistry Laboratory II
PH 103 General Physics I
PH 104 General Physics II
PH 105 General Physics Laboratory I
PH 106 General Physics Laboratory II

B.A., Biology

Students earning a B.A. with a biology major must complete 124 credit hours. Courses include the basic biology courses listed earlier in this section, the core requirements of the university, and those additional courses listed below:

Required Courses

BI 330 General Ecology with Laboratory

3 credit hours biology/science elective
Choice of math courses M 115 Precalculus and M 117 Calculus *or* M 117 Calculus I and M 118 Calculus II *or* M 127 Finite Math and M 228 Elementary Statistics.

B.S., Biology

Students earning a B.S. with a major in biology must complete 123 credit hours. Courses include the basic biology courses listed earlier in this section, the core requirements of the university, and those additional courses listed below:

Required Courses

BI 304 Immunology with Laboratory
BI 305 Developmental Biology with Laboratory
BI 330 General Ecology with Laboratory

Choice of math courses M 115 Precalculus and M 117 Calculus *or* M 117 Calculus I and M 118 Calculus II *or* M 127 Finite Math and M 228 Elementary Statistics.

B.S., Biology/ Premedical/Predental/ Preveterinary

Students earning a B.S. with a major in biology in the premedical/ predental/preveterinary medical program must complete 124 credit hours. Course requirements include the basic courses listed earlier in this section, the core requirements of the university, and those additional courses listed below:

Required Courses

BI 304 Immunology with Laboratory
BI 305 Developmental Biology with Laboratory
CH 211 Quantitative Analysis with Laboratory
M 117 Calculus I
M 118 Calculus II

Students who complete the program will have met the basic entrance requirements of virtually every U.S. college of medicine, dentistry and veterinary medicine. Entrance into these colleges is highly competitive and completion of the program does not guarantee acceptance into a medical, dental or veterinary medical college.

An agreement between the University of New Haven and Ross University in Dominica allows up to fifteen qualified pre-medical/pre-veterinary students from UNH each year to complete simultaneously their senior year and first year of medical or veterinary school at Ross University's Schools of Medicine and Veterinary Medicine. To qualify, students must have a grade point average of at least 3.0; receive a favorable recommendation from the University of New Haven's Premedical Advisory Committee, and apply for admission to Ross University at least six months before entrance.

B.S., Biomedical Computing

The biomedical computing program prepares students for positions requiring an understanding of both the biological sciences and computer science. The program investigates the changes computers have made in analytical and diagnostic methods for the biological sciences and explains the integration of computing with the biological sciences.

Students earning a B.S. with a major in biomedical computing must complete 130 credit hours. The course must include the university's core requirements and these additional courses listed below:

BI 253 Biology for Science Majors with Laboratory I
BI 254 Biology for Science Majors with Laboratory II
BI 308 Cell Physiology with Laboratory
BI 310 Vertebrate Anatomy and Physiology with Laboratory
CH 115 General Chemistry I
CH 117 General Chemistry I Laboratory
CH 116 General Chemistry II
CH 118 General Chemistry II Laboratory
CH 107 Elementary Organic Chemistry with Laboratory
CS 106 Introduction to Computers: PASCAL, CS 226 Advanced Pascal Programming and CS 230 Intensive FORTRAN *or* CS 102 Introduction to Computers: FORTRAN CS 224 Advanced FORTRAN Programming and CS 226 Advanced PASCAL Programming
CS 334 Assembler Language *or* EE 475 Microprocessors
EE 211 Principles of Electrical Engineering I
EE 212 Principles of Electrical Engineering II
EE 372 Computer Engineering II
IE 335 Simulations and Applications
M 117 Calculus I
M 118 Calculus II
M 371 Probability and Statistics
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnatism and Optics with Laboratory

16 credit hours of biology electives
3 credit hours of an industrial engineering elective

A.S., Biology

The associate in science degree program in biology is essentially the first two years of the bachelor of arts program in biology. Many students, especially those enrolled in the Evening Division, may prefer to receive the associate degree after the completion of the first two years of study.

The A.S. degree program may be modified to provide the necessary requirements for entrance into certain types of professional degree programs, such as nursing or pharmacy. Students should meet with their adviser for further information concerning the A.S. in biology.

Required Courses

All students must complete 60 to 64 credit hours of courses to earn the associate in science degree with a biology major, including the courses listed below:

BI 253	Biology for Science Majors I with Laboratory
BI 254	Biology for Science Majors II with Laboratory
BI 301	Microbiology with Laboratory
BI 311	Genetics
BI 330	General Ecology with Laboratory
CH 115	General Chemistry I
CH 116	General Chemistry II
CH 117	General Chemistry Laboratory I
CH 118	General Chemistry Laboratory II

6 credit hours of biology electives
Choice of math courses M 115 Precalculus and M 117 Calculus I *or* M 117 Calculus I and M 118 Calculus II *or* M 127 Finite Math and M 128 Elementary Statistics.

Minor in Biology

To minor in biology, students must complete 21 credit hours, including those courses listed below. In some instances, an upper-level biology course can be substituted for general biology.

BI 121	General and Human Biology I with Laboratory
BI 122	General and Human Biology II with Laboratory
	or
BI 253	Biology for Science Majors I with Laboratory
BI 254	Biology for Science Majors II with Laboratory

4 upper-level biology electives
3 credit hours of a biology elective

A concentration in biology offers greater exposure to the study of biology than a minor, yet still allows the student to complete a major in another field. A total of 28 credit hours is required. The subjects listed under the minor must be completed plus two other upper-level courses.

Minor in Bioengineering

No rigid group of courses constitutes a minor in bioengineering. Students wishing to follow such a program should major in one aspect of engineering and take a minor (21 credit hours) or a concentration (28

credit hours) in biology; or a biology major program may be combined with a minor or concentration in engineering. Consultation with the particular engineering and biology department chairman should be made before starting the program.

Minor in Education

The B.S. program in biology provides a well-rounded science background and fulfills all the technical courses needed for the teaching certificate. Some upper-level education courses may be taken in cooperation with other institutions.

Minor in Nutrition

Students who wish to minor in nutrition must take the following courses:

BI 115 Nutrition and Dietetics
BI 116 Fundamentals of Food Service
BI 315 Nutrition and Disease

BI 121 General and Human Biology I
BI 122 General and Human Biology II
or
BI 253 Biology for Science Majors I with Laboratory
BI 254 Biology for Science Majors II with Laboratory

Plus 1 upper-level nutrition course.

Environmental Science

Environmentalists find employment in business, as well as in municipal, state and federal governmental organizations. Employment opportunities can be found in testing and control of pollutants, equipment sales, administration, laboratory research, consulting and as industrial environmental safety experts for those majoring in this field.

Usually specialized training is necessary if one eventually wishes an administrative job at a high salary level. These programs are designed to enable students to enter a graduate or specialty school to continue their education. Examples of advanced study would be a graduate program of environmental science or engineering, a school of forestry, a program in urban ecology or a school of public health.

The bachelor of science degree in environmental science offers concentrations in the following areas: air-water control and management, environmental health and community ecology.

A master of science program in environmental science is offered by the Graduate School. More may be learned about this program from the Graduate School catalog.

B.S., Environmental Science

Required Courses

All students earning a bachelor's degree in environmental studies must complete the core requirements of the university and the courses listed below:

BI 135 Earth Science
BI 253 Biology for Science Majors I with Laboratory
BI 254 Biology for Science Majors II with Laboratory
BI 301 Microbiology with Laboratory
BI 330 General Ecology with Laboratory
BI 502 Fresh Water and Marine Ecology with Laboratory
BI 510 General Environmental Health
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
CH 211 Quantitative Analysis with Laboratory
CH 221 Instrumental Methods of Analysis with Laboratory
PH 103 General Physics I
PH 104 General Physics II
PH 105 General Physics Laboratory I
PH 106 General Physics Laboratory II
SC 507 Characterization and Treatment of Wastes with Laboratory
SC 513 Environmental Pollutants with Laboratory

6 to 8 credit hours of biology, science or chemistry electives
M115 Precalculus and M 117 Calculus I *or* M 117 Calculus I and M 118 Calculus II
CH 201 Organic Chemistry I, CH 203 Organic Chemistry I Laboratory, CH 202 Organic Chemistry II and CH 204 Organic Chemistry II Laboratory
CH 107 Organic Chemistry and CH 108 Elementary Organic Chemistry Laboratory

A.S., Environmental Science

The associate's program is designed to lead directly into the bachelor's program if students wish to continue their studies. Evening students often prefer to obtain an associate's degree on their way to completing the requirements for the bachelor of science degree. The associate in science program provides a terminal degree for those who intend to work or already work in the environmental field, but who are trained in engineering, chemistry or business and lack the necessary background and training in biology and ecology required today in the practice of environmental control and management.

Required Courses

Students earning an associate degree in environmental science are required to complete 68 credit hours, which include first and second year courses from the university core requirements and the courses listed below:

BI 253 Biology for Science Majors I with Laboratory
BI 254 Biology for Science Majors II with Laboratory
BI 301 Microbiology with Laboratory
BI 330 General Ecology with Laboratory
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
CH 211 Quantitative Analysis with Laboratory
SC 135 Earth Science

3 credit hours of biology elective
Choice of math courses M 115-117; M 117-118; *or* M 115-116

Minor in Environmental Science

The minor in environmental science provides a useful background for students majoring in many other areas of study if they have concern for the environment. For example, students majoring in political science might well combine their program with a minor in environmental science. Another useful combination is an environmental science minor and a major in business administration or engineering.

For specific information concerning a minor in environmental science, please consult with the department chairman.

Department of Chemistry and Chemical Engineering

Chairman: George L. Wheeler, Ph.D.

Professors: Peter J. Desio, Ph.D., University of New Hampshire, George L. Wheeler, Ph.D., University of Maryland, (Jacob Finley Buckman Professor of Chemistry and Chemical Engineering)

Associate Professors: Jale Akyurtlu, Ph.D., University of Wisconsin, Michael J. Saliby, Ph.D., State University of New York at Binghamton.

This program is designed to provide a traditional liberal arts background with the basic requirements of a chemistry major.

B.A., Chemistry

Required Courses

All students in the B.A. in chemistry program must complete 126 credit hours. These courses must include the university core requirements and the courses listed below:

CH 115 General Chemistry I
CH 116 General Chemistry II
CH 118 General Chemistry Laboratory II
CH 201 Organic Chemistry I
CH 202 Organic Chemistry II
CH 203 Organic Chemistry Laboratory I
CH 204 Organic Chemistry Laboratory II
CH 211 Quantitative Analysis with Laboratory
CH 221 Instrumental Methods of Analysis with Laboratory
CH 331 Physical Chemistry with Laboratory I
CH 332 Physical Chemistry with Laboratory II
CH 411 Seminar I
CH 412 Seminar II
CH 501 Advanced Organic Chemistry
CH 521 Advanced Inorganic Chemistry
M 117 Calculus I
M 118 Calculus II
M 203 Calculus III
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory

18 credit hours of electives

B.S., A.S., Chemistry

The B.S. and A.S. programs in chemistry appear in this catalog under the School of Engineering.

Department of Communication

Chairman: Jean-Richard Bodon, Ph.D.

Professor: M.L. McLaughlin, Ph.D., University of Wisconsin

Associate Professors: Jean-Richard Bodon, Ph.D., Florida State University; Steven A. Raucher, Ph.D., Wayne State University

Assistant Professors: Kathleen Long, M.A., West Virginia University, M.S., Southern Illinois University; James C. Paty, M.A., University of Alabama

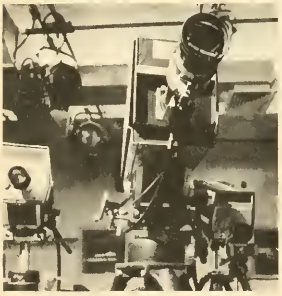
The communication programs at the university allow each student to develop interpersonal and mass communication skills and awareness through a sequence of course offerings.

Complete information about the bachelor of science degree program in communication is listed under the School of Business elsewhere in this catalog. Also included are course listings and information concerning communication as a minor field of study.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.A., Communication



The University of New Haven offers a B.A. and a B.S. in communication.

The bachelor of arts degree program normally carries a strong minor in journalism. It emphasizes the aesthetic and creative aspects of the major, and travels lightly along technical and production paths.

Required Courses

All students in the B.A. in communication program must complete 120 credit hours. These courses must include the university core requirements and 36 credit hours of communication courses, including those listed below:

CO 100 Human Communication
CO 101 Fundamentals of Mass Communication
CO 200 Theories of Group Communication
CO 208 Introduction to Broadcasting
CO 300 Persuasive Communication

CO 302 Social Impact of Media
CO 307 Writing for TV and Radio
CO 308 Broadcast Journalism
CO 340 History of Film
J 101 Journalism I

B.S., Communication

The university also offers a B.S. in communication through the School of Business. See page 121 for information.

A.S., Journalism

The School of Arts and Sciences offers journalism as both an associate in science degree major and as a minor in a bachelor's degree curriculum.

A curriculum built around a minor in journalism and a bachelor's degree major such as communication, English, history, political science, social welfare or environmental studies provides an excellent undergraduate education for a potential journalist.

Internships—work on local newspapers for academic credit—are available for qualified students.

Required Courses

Students must complete 60 credit hours of courses to earn the associate in science degree with a journalism major, including the courses listed below:

CO 100 Human Communication
J 101 Journalism I
J 102 Journalism II
J 201 News Writing and Reporting
J 202 Advanced News Writing and Reporting
E 105 Composition
E 110 Composition and Literature
EC 133 Principles of Economics I
EC 134 Principles of Economics II
P 111 Introduction to Psychology
PS 121 American Government and Politics

6 credit hours of history including HS 102 "The Western World in Modern Times"
6 credit hours of science or math electives
9 credit hours of communications electives

Communication Certificate Programs

Coordinator: Jean-Richard Bodon, Ph.D.

The communication department offers certificates in journalism and mass communication. Students may choose to take these courses on a credit or non-credit basis. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, if you are admitted, the credits earned may be applied toward the requirements for a degree program.

Journalism Certificate

A program designed to provide basic journalism skills in both print and broadcasting media. This certificate program may supplement students' experience, or prepare them for other areas in their current field of work. All students are required to take 15 credit hours, including the courses listed below:

Required Courses

J 101 Journalism I
J 102 Journalism II
J 201 News Writing and Reporting

Plus two courses from among the following:

CO 302 Social Impact of Media
CO 307 Writing for Television and Radio
CO 308 Broadcast Journalism
J 202 Advanced News Writing and Reporting
J 311 Copy Desk
J 351 Journalistic Performance
J 367 Interpretive Editorial Writing

Mass Communication Certificate

For information on the mass communication certificate, see page 123 in the School of Business section of the catalog.

Department of Economics & Quantitative Analysis

Acting Chairman: Thomas Katsaros, Ph.D.

Professors: Phillip Kaplan, Ph.D., The Johns Hopkins University; Joseph A. Parker, Ph.D., University of Oklahoma; Alan Plotnick, Ph.D., University of Pennsylvania; Franklin B. Sherwood, Ph.D., University of Illinois; John J. Teluk, M.A., Free University of Munich; William S.Y. Pan, Ph.D., Columbia University

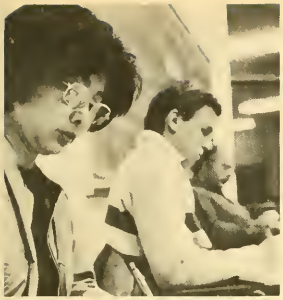
Associate Professors: George Karatzas, Ph.D., New York University; Ward Theilman, Ph.D., University of Illinois; Warren J. Smith, M.B.A., Northern University

Assistant Professor: Linda R. Martin, Ph.D., University of South Carolina

Lecturer: Mary Martha Woodruff, M.A., Murray State University, M.S., University of New Haven

B.A., Economics

Economics courses provide a basis for an understanding of economic structures, a wide range of domestic and international issues and trends in the life of modern societies. They offer training in analysis of



economic problems as an aid to the evaluation of economic policies.

Introductory courses are designed to provide the foundation of economic knowledge which every citizen in a modern complex society should have in order to understand the decisions of individual economic units and the operation of a national economy as a whole. This program is designed for students planning graduate studies.

Required Courses

All students in the B.A. in economics program must complete 120 credit hours. These courses must include the university core requirements and 30 credit hours in economics, including the courses listed below:

EC 133 Principles of Economics I
EC 134 Principles of Economics II
EC 340 Microeconomic Analysis
EC 341 Macroeconomic Analysis
EC 342 International Economics
EC 420 Applied Economic Analysis
EC 442 Economic Thought

9 credit hours of an elective offered by the economics department

B.S., Business Economics

The University of New Haven also offers a B.S. in business economics. Please see the School of Business section of this catalog for more information about the bachelor of science program.

Minor in Economics

A total of 18 credit hours of work in economics is required for the minor in economics.

Recommended Courses

EC 133 Principles of Economics I
EC 134 Principles of Economics II
EC 312 Contemporary Economic Problems

Plus 9 credits of economics electives to be chosen from:

EC 311 Government Regulation of Business
EC 314 Public Finance and Budgeting
EC 336 Money and Banking
EC 340 Microeconomic Analysis
EC 341 Macroeconomic Analysis
EC 345 Comparative Economic Systems
EC 350 Economics of Labor Relations
EC 440 Economic Development

Department of English

Chairman: Paul Marx, Ph.D.

Director of Freshman English: Donald M. Smith, A.M.

Professors: Paul Marx, Ph.D., New York University; Douglas Robillard, Ph.D., Wayne State University; David E.E. Sloane, Ph.D., Duke University

Associate Professors: Srilekha Bell, Ph.D., University of Wisconsin; Bruce A. French, Ph.D., New York University; Nancyanne Rabianski, Ph.D., State University of New York at Buffalo

Assistant Professor: Donald M. Smith, A.M., Columbia University

Instructor: Shakuntala Jayaswal, M.A., University of Wisconsin-Madison

The study of literature is at the heart of a liberal education. English and American literature taken together comprise noble monuments to man's intellect and creativity. In addition to its generally broadening effect, the study of literature will help the student to think critically and write and speak more effectively.

A major in English is looked upon very favorably by admissions officers of law, medical and dental schools. It is also good preparation for graduate work in such fields as business, education, urban planning, social work and public health. Employers in many areas of business, industry and government look favorably upon the college graduate who has both breadth of knowledge and the ability to communicate.

A major in English may be taken with a concentration in either literature or writing; the two concentrations complement each other. The literature concentration stresses the development of critical appreciation of the great works in the English language; the writing concentration stresses the growth of the student's own skill in language use. Some specific areas in which this skill has immediate, practical worth are journalism, advertising, public relations, sales training or promotion. Many companies hire writers and editors for company periodicals and reports, equipment handbooks and service manuals. Publishing houses provide employment, of many kinds and on many levels, for persons skilled in writing. For writers of proven ability, there are numerous opportunities to free-lance for trade journals, newspapers, magazines and other publications.

Foreign Language Study

While study of a foreign language is not required, it is strongly recommended that the student who majors in English know at least one foreign language. Knowlege of a foreign language makes one more sensitive to the use and meaning of words in one's own language. Furthermore, knowledge of a foreign language widens one's perspective and deepens one's understanding through the insights gained into another culture. Students who are considering graduate study certainly should become competent in at least one foreign language.

The English Club

The club is open to anyone associated with the university. Its aims are to encourage a greater love of good writing, to provide informal and diversified encounters with professional writers and to further the literary arts on campus. In addition to sponsoring films on writers and group excursions to plays, the English Club publishes the university's student literary magazine, *The Noiseless Spider*.

Transfer Credit for Writing Courses

The English department automatically will award credit for freshman writing courses taken at an accredited four-year American college or university if the courses are essentially the same as E105 or E110 and if the student received at least a "C." If the courses were taken at a two-year college or at a foreign college, the student will have to demonstrate his or her proficiency in writing before credit will be awarded. In the latter case, the student should make an appointment with the secretary of the English department for the writing of a one-hour composition.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.A., English (Literature Concentration)

All students in the B.A. in English program with a concentration in literature must complete 120 credit hours. These courses must include all university core requirements and 36 credit hours of English beyond the freshman level, including those courses listed below:

Required Courses

E 211 British Writers I
E 212 British Writers II
E 213 American Writers I
E 214 American Writers II
E 341 Shakespeare I *or* E 342 Shakespeare II
E 406-409 A continental literature course

6 English courses, one each from groups A, B, C and D and two additional courses from groups A through E.

Group A

E 302 History of the English Language
E 323 Renaissance in England
E 362 Age of Donne and Milton
E 375 Age of Chaucer

Group B

E 353 Literature of the Romantic Era
E 356 Later 19th Century English Literature
E 371 Literature of the Neoclassic Era
E 390 English Novel I

Group C

E 361 Modern British Literature
E 391 English Novel II
E 402 Modern Poetry
E 405 Modern Drama

Group D

E 392 Poe, Hawthorne and Melville
E 393 American Transcendentalists
E 395 American Realism and Naturalism
E 477 American Literature Between World Wars
E 478 Contemporary American Literature
E 406-409 A continental literature course

Group E

E 201 Literary Heritage I
E 202 Literary Heritage II
E 260 The Short Story
E 261 The Essay
E 267 Creative Writing I
E 268 Creative Writing II
E 275 Film Studies
E 281 Science Fiction
E 481-498 A studies in literature course

B.A., English (Writing Concentration)

All students in the B.A. in English program with a writing concentration must complete 120 credit hours. These courses must include all university core requirements and 36 credit hours of English beyond the freshman level, including those listed below.

The term "writing skill" implies that its possessor has both ideas to express and the skill with which to communicate them. For this reason, students in the writing concentration are required to take literature courses, as well as writing courses.

Required Courses

E 220 Writing for Business and Industry
E 225 Technical Writing
E 250 Expository Writing
E 261 The Essay
E 267 Creative Writing I
E 268 Creative Writing II
E 480 Internship (may be substituted for one of the writing courses)

18 credit hours of literature (courses chosen in consultation with a faculty adviser) including one course from the E 406-409 continental literature series.

Minor in Writing

A total of 18 credit hours is required for the minor in writing.

Required Courses

12 credit hours of writing courses.
6 credit hours of literature courses.

Minor in Literature

A total of 18 credit hours in literature courses is required for the minor in literature.

Department of History

Chairman: Robert Glen, Ph.D.

Professor: Joseph B. Chepaitis, Ph.D., Georgetown University

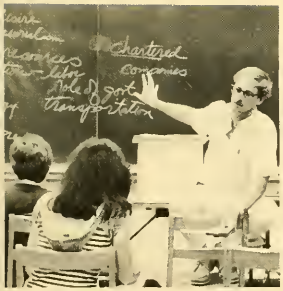
Associate Professor: Robert Glen, Ph.D., University of California, Berkeley

Assistant Professor: Edmund N. Todd, III, Ph.D., University of Pennsylvania

History provides a framework for a liberal education. The study of human experience—failures as well as achievements—is the core of historical study. It gives insight into related disciplines in the humanities and social sciences and broadens the perspective of students in professional fields of business and engineering, revealing the complexity and interrelatedness of human experience.

History is also excellent preparation for a variety of careers in business, government, law, journalism, foreign service and many other areas. Because of the great variety of professional programs at the University of New Haven, the student interested in history can combine this interest with highly technical professional training.

The department strives to meet its objectives by teaching not only content but critical and writing skills through reading, class presentation and discussion, research and writing. Historical methodology is stressed in all advanced courses, and students are urged to take the history seminar in their senior year to sharpen their critical and analytical skills.



Phi Alpha Theta

The University of New Haven has a chapter of the International Honor Society in History, Phi Alpha Theta, which is open to those students who have had 12 hours of history or more and have maintained an average of better than 3.0 in history courses and better than 2.90 overall. The university chapter of Phi Alpha Theta provides the students and faculty with a social and intellectual experience beyond classroom work, offering films, speakers and roundtable discussions. Students not eligible for membership in the society are welcome to participate in all of the chapter's activities.

B.A., History

All students in the B.A. in history program must complete 120 credit hours. These courses must include the university core requirements and 36 credit hours of history courses, including those listed below. The balance of the program can be arranged in consultation with an adviser.

The department offers concentrations in the general program as well as in specific area studies that include American studies, European studies and economic history. A student who wishes to pursue concentrations in one of these areas should consult with an adviser for specific requirements.

Required Courses

HS 101 Foundations of the Western World
HS 102 The Western World in Modern Times
HS 491 Senior Seminar

HS 211 United States History to 1865 *and*
HS 212 United States History from 1865
or
HS 110 American History from 1607 *and*
Any other United States history course excluding HS 211 *and* HS 212

1 upper-division history course in each of these areas: European, American, non-Western world

Minor in History

A total of 18 credit hours in history is required for a minor in history. These courses must include two of those listed below and may include any other combination of four courses in history that supports the student's interests and needs.

Required Courses

HS 101 Foundations of the Western World *and*
HS 102 The Western World in Modern Times
or
HS 105 Foundations of Economic History *and*
HS 106 Modern Economic History

Department of Humanities, Fine and Performing Arts

Chairman: Michael G. Kaloyanides, Ph.D.

Professors: Ralf E. Carriuolo, Ph.D., Wesleyan University; Michael G. Kaloyanides, Ph.D., Wesleyan University; Elizabeth Moffitt, M.A., Hunter College, City University of New York

Assistant Professors: Edward J. Maffeo, Ph.D., New York University; Joel H. Marks, Ph.D., University of Connecticut

Director of Theatre: Lila Wolff-Wilkinson, M.A., Hofstra University

Practitioners-in-Residence: Albert G. Celotto, M.M., Indiana University; Sharon Carter Matthews, M.Arch., Yale University; Barbara Sudick, M.F.A., Yale University

Fine and Applied Arts

Coordinator: Elizabeth Moffitt, B.F.A., M.A.

Study of the visual arts provides an opportunity for self-realization and gives the individual a perception of his relationship to society. Foundation courses in the basics of two- and three-dimensional design, color and drawing, plus work in such major disciplines as painting and sculpture, provide the student with the necessary vocabulary for effective visual communication.

Knowledge of the development of art throughout man's cultural evolution from the cave era to present day, is provided through studies in art history and the contemporary art scene. Thus equipped with a working vocabulary of visual form and a sense of art history, the student progresses toward the goal of making a mature visual statement in his or her chosen field.

University of New Haven art programs provide preparation for graduate study or career opportunities in the fields of fine arts, graphic design and interior design, among others.

Students in all B.A. art programs listed below must complete at least 120 credit hours. These courses must include the core requirements for the university and the required courses as listed for each program.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.A., Art

This program is designed to assist the student in discovering his or her potential for creative expression in the plastic arts and the development of a personal idiom in the disciplines of his or her own choosing including painting, sculpture, drawing, printmaking, etc. Acquisition of an effective visual vocabulary is promoted by foundation courses in two- and three-dimensional design, color and drawing. Art historical studies provide perspective on the art forms of the past.

The program prepares the student for graduate study in art as well as for career opportunities in a broad spectrum of art and art-related fields.

Required Courses

AT 101 Introduction to Studio Art I
AT 102 Introduction to Studio Art II
AT 105 Basic Drawing I
AT 106 Basic Drawing II
AT 201 Painting I
AT 202 Painting II
AT 211 Basic Design I
AT 212 Basic Design II
AT 213 Color
AT 231 Art History I
AT 232 Art History II *or* art history elective
AT 304 Sculpture I *or* AT 305 Sculpture II
AT 313 Photography
AT 315 Printmaking
AT 302 Figure Drawing
AT 401 Studio Seminar I
AT 402 Studio Seminar II

B.A., Graphic Design

Practitioner-in-Residence: Barbara Sudick, M.F.A.

Graphic design is the creation of visual material using drawing, type and photographic techniques in order to communicate information. While often in the form of printed material such as books, brochures, posters and signs, graphic design also has applications in video and computer graphics.

The programs in graphic design train students for professional careers in this challenging field as well as preparing them for graduate

study in graphic design. The graphic design programs emphasize the development of drawing proficiency, innovative approaches to design and typographical skills accompanied by a fundamental understanding of the lastest graphic communications technology.

Required Courses

AT 105 Basic Drawing I
AT 106 Basic Drawing II
AT 122 Graphic Design Production
AT 201 Painting
AT 203 Graphic Design I
AT 204 Graphic Design II
AT 211 Basic Design (two-dimensional)
AT 212 Basic Design (three-dimensional)
AT 213 Color
AT 221 Typography I
AT 222 Typography II
AT 231 History of Art
AT 232 History of Art II *or* art history elective
AT 309 Photo Design
AT 313 Photography I
AT 315 Printmaking
AT 322 Illustration
AT 401 Studio Seminar I (in Graphic Design)
AT 402 Studio Seminar II (in Graphic Design)
AT 599 Independent Senior Project
MK 307 Advertising and Promotion

B.A., Interior Design

Practitioner-in-Residence: Sharon Carter Matthews, M.Arch.

Studies in the interior design programs are organized to focus on the technology of a built environment, programming and three-dimensional composition. Students explore the relationship between interior designers and their clients, the interaction between designers and architects and methods of communication between designers and fabricators. In addition to interior design problems, students are given the opportunity to develop their studio art skills and their presentation techniques. Core course work includes architectural drawing, building construction, color theory, history of interior design and textile design.

Required Courses

AT 101 Introduction to Studio Art
AT 105 Basic Drawing I
AT 106 Basic Drawing II
AT 211 Basic Design I
AT 212 Basic Design II
AT 213 Color
AT 216 Architectural Drafting
AT 231 History of Art I
AT 232 History of Art II *or* art history elective
AT 233 History of Interior Design
AT 302 Figure Drawing
AT 304 Sculpture I *or* AT 305 Sculpture II
AT 317 Interior Design
AT 319 Textile Design
AT 322 Illustration
AT 401 Studio Seminar I (in Interior Design)
AT 402 Studio Seminar II (in Interior Design)

Recommended Electives

AT 203 Graphic Design I
AT 309 Photographic Design
1 art history elective.

A.S., Graphic Design

Required Courses

AT 105 Basic Drawing I
AT 106 Basic Drawing II
AT 211 Basic Design I (two-dimensional)
AT 212 Basic Design II (three-dimensional)
AT 213 Color
AT 122 Graphic Design Production
AT 221 Typography I
AT 222 Typography II
AT 313 Photography
AT 309 Photo Design

B.A., Pre-Architecture

Practitioner-in-residence: Sharon Carter Matthews, M.Arch.

The pre-architecture program provides a thorough preparation for students planning to enter a professional degree program at the graduate school level. It also provides architecturally oriented training for those who might wish to seek employment in this and related areas such as city planning or landscape design. Liberal arts, technological studies and studio arts are carefully integrated into a balanced curriculum. Students gain insight into the relationship between architects and clients, investigate the nature of building and develop skills in presentation methods. Course work includes the history of architecture, architectural drawing, building construction, appropriate civil engineering studies and studio art courses in color and design.

Required Courses

AT 105 Basic Drawing I
AT 106 Basic Drawing II
AT 211 Basic Design I
AT 212 Basic Design II
AT 213 Color
AT 216 Architectural Drawing
AT 231 History of Art I
AT 232 History of Art II
AT 253 History of Architecture and Interior Design
AT 302 Figure Drawing
AT 304 Sculpture I
AT 317 Interior Design
AT 322 Illustration
AT 531 Contemporary Art
AT 401 Studio Seminar I
AT 402 Studio Seminar II
CE 302 Building Construction
CE 403 City Planning
HU 300 Nature of Science
M 115 Pre-Calculus
M 117 Calculus
PH 103 General Physics I
PH 105 General Physics Lab I

A.S., Interior Design

Required Courses

AT 211 Basic Design I
AT 212 Basic Design II
AT 213 Color
AT 216 Architectural Drawing
AT 231 History of Art I
AT 232 History of Art II *or* art history elective
AT 233 History of Interior Design
AT 317 Interior Design
AT 322 Illustration
AT 304 Sculpture I *or* AT 305 Sculpture II
AT 402 Studio Seminar II (in Interior Design)

A.S., Photography

Required Courses

AT 101 Introduction to Studio Art I
AT 105 Basic Drawing I
AT 211 Basic Design I
AT 231 History of Art I
AT 232 History of Art II *or* art history elective
AT 309 Photographic Design
AT 310 Studio Lighting
AT 313 Photography I
AT 314 Photography II
AT 330 Film Animation
AT 420 Studio Seminar

Minor in Art

A total of 18 credit hours of work in art is required for the minor in art. Students may take the courses listed below and any other combination of courses that fills their needs and interests.

Recommended Courses

AT 105 Basic Drawing I
AT 211 Basic Design I *or* AT 212 Basic Design II
AT 231 History of Art I
AT 232 History of Art II
AT 213 Color
AT 201 Painting I
AT 304 Sculpture I *or* AT 305 Sculpture II

Art Certificate Programs

Coordinator: Elizabeth Moffitt, M.A.

The art department offers certificates in graphic design, interior design and photography. Students must complete 15 to 18 credit hours of required courses to earn a certificate. Students may choose to take these courses for credit or non-credit. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, if you are admitted, the credits earned may be applied toward the requirements for a degree program.

Graphic Design Certificate

This is a certificate to prepare persons already in industry who wish to update their commercial art skills or for persons who wish experience in layout, design and the principles of effective design communication. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

AT 105 Basic Drawing I
AT 122 Graphic Design Production
AT 211 Basic Design I
AT 221 Typography I
AT 222 Typography II

Interior Design Certificate

A program developed for individuals seeking a professional knowledge of design and decorating skills applicable to both home and office decoration. All students are required to take 15 credit hours, including five of the seven courses listed below:

Required Courses

AT 105 Basic Drawing I
AT 211 Basic Design I
AT 216 Architectural Drawing
AT 233 History of Interior Design
AT 312 Color
AT 317 Interior Design
CE 302 Building Construction

Photography Certificate

A program in the basic design principles and techniques which govern photography. Designed for beginners, for people who want to apply photography to their present jobs, and for people who want to improve their present photography skills.

This certificate also offers a foundation in photography for pleasure and leisure activities and for an aesthetic appreciation of photography as well. Students are required to take 15 credit hours, including the following courses:

Required Courses

AT 211 Basic Design I
AT 309 Photographic Design
AT 313 Photography I
AT 314 Photography II
AT 330 Film Animation

Theatre Arts

Director: Lila Wolff-Wilkinson, M.A.

Theatre courses may be used to satisfy the arts core requirements. Refer to the latest class schedule bulletin to determine the specific courses permitted.

Productions

The university community may take part in all department productions. Volunteers may act, help with lighting, set and costume design, set construction, publicity and stage management. Participants need not be enrolled in theatre classes.

Minor in Theatre Arts

Students may complete a minor in theatre arts by taking 18 credit hours in the theatre program. They may choose from dramatic literature in theatrical contexts, production styles, directing and acting among others. Two major productions are mounted each year by the department with opportunities for students in performance, directing and backstage work.

Required Courses

T 131 Introduction to the Theatre
T 132 Theatrical Style
T 141 Early World Drama and Theatre
T 142 Modern World Drama and Theatre

6 credit hours in theatre arts, choose from: T341 Acting, T342 Directing, T491 Production Practicum I, T492 Production Practicum II, T599 Independent Study

Music

Coordinator: Michael G. Kaloyanides, Ph.D.

Music courses may be used to satisfy the fine arts core requirements.

B.A., World Music

The program in world music is unique. Music is studied as a worldwide phenomenon, not simply defined in the Western European art tradition. The student is encouraged to view music as a creation of all cultures and civilizations on both the folk and art levels, including our own urban and ethnic subcultures. Exposure to various music should lead the student to specialization in a particular area as an upperclassman.

Since music is a performing art, the student is expected to reach a satisfactory level of proficiency in either a traditional western instrument or one central to the particular culture in which he chooses to specialize.

A degree in world music qualifies students for professions as performers, composers, music publishers, critics and journalists, teachers, curators and librarians. Combining music with other fields, graduates may enter the fields of concert and ensemble management and sound engineering areas. There are, of course, countless performance opportunities for instrumentalists, vocalists and composers. Vocations such as music publishing, recording sales and promotions, and music criticism and journalism are also available to graduates with a degree in music. Students may also pursue careers in music education, not only as teachers in schools and conservatories but also as curators and librarians.

All students majoring in the B.A. in world music program must complete 120 credit hours.

Although the program contains no language requirements, students are urged to acquaint themselves with the language of their area of concentration.

Required Courses

These courses must include the core requirements for the university and 36 credit hours of world music including 21 credit hours from among the following courses listed below:

MU 111 Introduction to Music
MU 112 Introduction to World Music
MU 116 Performance (at least 3 credit hours must be earned)
MU 150 Introduction to Music Theory
MU 151 Introduction to Music Theory
MU 198 Introduction to American Music
MU 199 Introduction to American Music
MU 201 Analysis and History of European Art Music
MU 202 Analysis and History of European Art Music
MU 250 Theory and Composition
MU 251 Theory and Composition

15 credit hours of upper-level courses (MU299 and above) including MU416 Advanced Performance

B.A., Music and Sound Recording

The bachelor of arts in music and sound recording is a unique four-year degree program. Its development is based on the philosophy that musicians should have a working knowledge of the media through which their art is most often heard and that sound recordists should have a working knowledge of the art form they are recording. Thus, it is designed to instruct students in three interrelated areas: 1) music history, theory and aesthetics; 2) musicianship; and 3) sound recording methodology and technique. Course work includes 38 credits in arts and sciences, 36 credits in music, 15 credits in recording and 33 credits in restricted and free electives for a total of 122.

Required Courses

These courses must include university core requirements and the following courses listed below:

MU 111 Introduction to Music
MU 112 Introduction to World Music
MU 150 Music Theory I
MU 151 Music Theory II
MU 116 Performance (two semesters)
MU 201 Analysis and History of European Art Music
MU 202 Analysis and History of European Art Music
MU 175 Musicianship I
MU 176 Musicianship II
MU 211 History of Rock
MU 221 Film Music
MU 301 Recording Fundamentals
MU 311 Multitrack Recording I
MU 312 Multitrack Recording II
MU 401 Recording Seminar/Project I
MU 402 Recording Seminar/Project II
PH 103 General Physics I
PH 104 General Physics II
PH 105 General Physics Lab I
PH 106 General Physics Lab II

B.S., Music and Sound Recording

The bachelor of science in music and sound recording is similar to the bachelor of arts program in its philosophy and design but provides a stronger background in the science and technology of recording through classes in calculus, physics and electrical engineering. Course work includes 43 credits in arts and sciences, 36 credits in music, 15 credits in recording, six credits in electrical engineering and 21 credits in restricted and free electives for a total of 121 credits.

Required Courses

These courses must include university core requirements and the following courses listed below:

MU 111 Introduction to Music
MU 112 Introduction to World Music
MU 116 Performance (2 semesters)
MU 150 Music Theory I
MU 151 Music Theory II
MU 175 Musicianship I
MU 176 Musicianship II
MU 201 Analysis and History of European Art Music
MU 202 Analysis and History of European Art Music
MU 211 History of Rock
MU 221 Film Music
MU 301 Recording Fundamentals
MU 311 Multitrack Recording I
MU 312 Multitrack Recording II
MU 401 Recording Seminar/Project I
MU 402 Recording Seminar/Project II
M 117 Calculus I
M 118 Calculus II
PH 150 Mechanics, Heat, Waves with Laboratory
PH 250 Electromagnetism & Optics with Laboratory
EE 211 Principles of Electrical Engineering I
EE 212 Principles of Electrical Engineering II

Minor in World Music

A total of 18 credit hours in world music courses other than performance are required for the minor in world music. A student's program should be planned in consultation with a member of the world music faculty.

Department of Mathematics

Chairman: Baldev K. Sachdeva, Ph.D.

Coordinator of Precalculus Mathematics: Shirley Wakin, Ph.D.

Professors: Joseph M. Gangler, Ph.D., Columbia University; Bertram Ross, Ph.D., New York University; Baldev K. Sachdeva, Ph.D., Pennsylvania State University; Bruce Tyndall, M.S., University of Iowa; James W. Uebelacker, Ph.D., Syracuse University; W. Thurman Whitley, Ph.D., Virginia Polytechnic Institute and State University

Associate Professors: Marion Dvorin, Ph.D., Moscow University; Richard B. Jones, Ph.D., Virginia Polytechnic Institute and State University; Shirley Wakin, Ph.D., University of Massachusetts

Assistant Professor: Shyue-Liang Wang, Ph.D., State University of New York at Stony Brook

The study of mathematics opens the door to a wide variety of career opportunities and academic pursuits. Mathematics is a major part of the framework of modern science and technology. Persons with strong mathematics backgrounds qualify for stimulating occupations in an ever increasing number of fields, from private industry to government service.

The mathematics department offers flexible programs in mathematics and applied mathematics with concentrations in computer science, natural sciences and mathematics. Students who do not take the computer science concentration are encouraged to consider a minor in computer science to be better prepared for our technological society. Students also may minor in mathematics.

Mathematics students have direct access to the departmental microcomputer, the university's Data General MV/8000 computer via numerous terminals distributed throughout the campus and the Microcomputer Laboratory.

Mathematics Club

The department of mathematics sponsors the Mathematics Club, which is open to all university students. The club provides students and faculty the opportunity to participate together outside the classroom, in the study of mathematics and its applications. Topics range from the serious application of mathematics to society, to avocations such as mathematically-based puzzles and games. Typical activities of the club include guest lectures, field trips, films and social events.

Honorary Memberships

Each year, the mathematics department awards to outstanding mathematics students free honorary memberships in the Mathematical Association of America, American Mathematical Society and Society for Industrial and Applied Mathematics.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practice, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

Basic Courses Required for All Mathematics Majors

All students earning a bachelor's degree in mathematics must complete the university core requirements, the course requirements for their particular math program, and the basic math courses listed below:

M 117 Calculus I
M 118 Calculus II
M 203 Calculus III
M 204 Differential Equations
M 311 Linear Algebra
M 361 Mathematical Modeling
M 371 Probability and Statistics I

Mathematics majors are strongly urged to consider the courses listed below, either as electives or as core curriculum courses:

EC 320 Mathematical Methods in Economics
PL 240 Philosophy of Science
SO 250 Research Methods

Refer to the university core requirements listed earlier in this catalog for the balance of courses needed.

B.A., Mathematics

This program is designed to provide students with a broad overview of mathematics and its applications, especially for students who wish to study pure mathematics, or for those whose career objectives include mathematics education or the application of mathematics to such fields as business, economics, the social sciences and actuarial science.

Students earning a B.A. with a mathematics major must complete a minimum 124 credit hours. These courses must include the basic courses required for all mathematics majors, which are listed above, the university core requirements listed earlier in this catalog, and the courses listed below:

Required Courses

M 321 Modern Algebra I
M 491 Departmental Seminar
CS 106 Introduction to Computers: Pascal

6 credit hours of mathematics, compatible with area of concentration, M300 series or above
8 credit hours of natural science with laboratories in two semester sequence

B.S., Applied Mathematics (Computer Science Concentration)

This program is primarily for students interested in using computing techniques to solve mathematical problems in a wide variety of disciplines. In addition to the mathematics requirements, students take eight or nine courses in computer science designed to provide training in the structure of computer languages, computing machines and computing systems.

Students in this program must complete a minimum of 125 credit hours. These courses must include the basic courses required for all mathematics majors, which are listed above; the university core requirements listed earlier in this catalog, and the courses listed below:

Required Courses

M 338 Numerical Analysis
M 472 Probability and Statistics II
CS 106 Introduction to Computers: Pascal
CS 226 Advanced Programming and Data Structures/Pascal
CS 320 Operating Systems
CS 334 Machine Organization/Assembly Language
CS 237 Data Structures and Algorithms
IE 339 Theory and Construction of Compilers

6 credit hours in computer science.
6 credit hours in mathematics, chemistry or physics.
3 credit hours in computer science, mathematics, chemistry or physics

B.S., Applied Mathematics (Natural Sciences Concentration)

This program is primarily for students whose mathematical interests are in the application of mathematics to such fields as physics, chemistry, statistics, operations research and engineering. In addition to the courses listed below, the students take five to seven courses in a single discipline of the natural sciences or engineering.

Students in this program must complete a minimum of 125 credit hours. These courses must include the basic courses required for all mathematics majors, which are listed above; the university core requirements listed earlier in this catalog, and the courses listed below:

Required Courses

M 321 Modern Algebra
M 338 Numerical Analysis I
M 491 Departmental Seminar
IE 106 Introduction to Computers: Pascal
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory

6 credit hours of mathematics, compatible with area of concentration, M300 series or above

Minor in Mathematics

Students may minor in mathematics by completing six mathematics courses approved by the department. Those students contemplating a minor in mathematics should consult with the department as early as possible in their academic careers as to the choice and availability of courses.

Required Courses

M 118 Calculus II
M 203 Calculus III
M 311 Linear Algebra

9 credit hours of mathematics courses which complement the major area of interest

Recommended Courses

M 204 Differential Equations
M 270 Discrete Structures *or* any course in the M300 series or above

Physics Department

Chairman: Kee W. Chun, Ph.D.

Professors: Kee W. Chun, Ph.D., University of Pennsylvania, Richard C. Morrison, Ph.D., Yale University

Physics is concerned with the most basic aspects of our knowledge of the natural world. It is a subject in which experiment and theory evolve constantly to provide a precise and simple description of the physical phenomena around us in terms of a relatively small number of physical laws and theories.

As a fundamental science, physics is at the root of almost all branches of science and technology. It has provided the microscopic basis for chemistry, has stimulated important developments in mathematics, is the basis of most branches of engineering, and, during the past decade, has proved to be increasingly valuable to the life sciences.

Consequently, a basic knowledge of physics is excellent preparation for diverse careers: research in university and government laboratories, industrial research and development, applied science and engineering, biological and medical sciences, research in environmental problems, and teaching at all levels from the elementary school to the university. It also prepares students for careers in non-physics-related fields such as philosophy, business and law.

The department offers B.A. and B.S. degrees in physics. Degree requirements are kept flexible to allow each physics major to tailor a program suited to individual career interests. The department strives to provide a well-balanced, four-year program emphasizing both the theoretical and the experimental in the broad areas of classical and modern physics.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.A., B.S., Physics

All students in the B.A. or B.S. in physics program must complete 120 credit hours. These courses must include the university core requirements, the course requirements for their particular physics program and the courses listed below. The balance of the program will be worked out in consultation with a faculty adviser.

Required Courses

PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory
PH 211 Modern Physics
PH 270 Thermal Physics
PH 280 Lasers
PH 301 Analytical Mechanics
PH 351 Intermediate Electricity and Magnetism
PH 373 Advanced Laboratory
PH 404 Senior Project
PH 415 Nuclear Physics
PH 451 Elementary Quantum Mechanics
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
M 117 Calculus I
M 118 Calculus II
M 203 Calculus III
M 204 Differential Equations

6 credit hours of computer programming electives
6 credit hours of mathematics electives
9 credit hours of physics electives

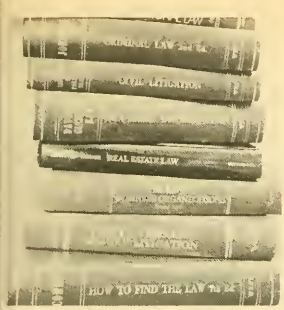
Minor in Physics

A total of 20 credit hours of work in physics is required for the minor in physics. Students may select from the courses listed below or plan their program in consultation with a faculty adviser.

Required Courses

PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory
PH 211 Modern Physics

9 credit hours of advanced physics



Department of Political Science

Chairman: James Dull, Ph.D.

Professors: Caroline A. Dinegar, Ph.D., Columbia University; James Dull, Ph.D., Columbia University; Franz B. Gross, Ph.D., Harvard University; Joshua H. Sandman, Ph.D., New York University;

Associate Professor: Natalie J. Ferringer, Ph.D., University of Virginia;

Practitioner-in-Residence: Alice Gale, J.D., University of Connecticut

A major in political science provides the student with a foundation for a career in government on the local, state, national, and international levels; for a career in law; for graduate school programs in political science, international relations and public policy, and for careers in the areas of campaign management, communication, public relations and business. All political science and pre-law majors or minors should discuss career goals and educational objectives with a departmental adviser within one month of entrance into the program.

Further, advice on Law School Admissions Test (LSAT) and the Graduate Record Examination (GRE) preparation courses, which our pre-law and graduate school-oriented students are urged to take, is available through the department.

Pre-law majors and minors in the department of political science have been especially successful in gaining entrance to law schools throughout the country.

The political science faculty grants the Rollin G. Osterwies Award for Excellence in Political Science each year to the outstanding student in the political science major.

B.A., Political Science

All students in the B.A. in political science program must complete 120 credit hours. These courses must include the university core requirements listed earlier in the catalog, and 48 credit hours of political science courses, including those listed below:

Required Courses

PS 121 American Government and Politics
PS 122 State and Local Government and Politics
PS 241 International Relations
PS 261 Modern Political Analysis
PS 461 Political Theory: Ancient and Medieval
PS 462 Political Theory: Modern and Contemporary
PS 499 (*or* PS 500) Senior Seminar in Political Science

Choice of comparative political systems PS 281-PS 285 (3-credit-hour elective)
24 credit hours of political science electives to be chosen with student's departmental adviser

Minor in Political Science

A student may minor in political science by completing 18 credit hours in the program, including those courses listed below:

Required Courses

PS 121 American Government and Politics
PS 122 State and Local Government and Politics

Plus 12 credit hours of political science courses chosen in conjunction with a department adviser. These courses should be related to the area of student interest and concentration.

Minor in Black Studies

The Black studies minor is an interdisciplinary program offered in the School of Arts and Sciences in which the department of political science participates. The minor consists of courses in political science, English, history, humanities and world music. A student may minor in this program by completing 18 credit hours including courses selected from the listing below:

Suggested Courses

PS 205 The Politics of the Black Movement in America
HS 120 History of Blacks in America
MU 112 Introduction to World Music
MU 550 Studies in Urban Ethnic Music
P 321 Social Psychology
PL 213 Contemporary Issues in Philosophy I
PL 214 Contemporary Issues in Philosophy II
SO 114 Contemporary Social Problems
SO 315 Social Change
SO 400 Minority Group Relations
SO 410 Urban Sociology

The Institute of Law and Public Affairs

Director: Caroline A. Dinegar, Ph.D.

The Institute of Law and Public Affairs has been established to provide undergraduates with specific training in the areas of paralegal activities, public policy and public affairs. Students with an undergraduate major in any of the schools of the university may attain a paraprofessional status in legal affairs or public affairs by completing a minor in the institute. The term paraprofessional applies to those with special training in a professional field but who do not yet possess the terminal degree normally required in the profession. In many instances, paraprofessional status is a step toward the accomplishment of the final degree.

Paralegal Studies Certificate

A certificate in paralegal studies is issued to students who complete 18 credit hours of paralegal courses. The certificate is normally supported by courses in the area of political science as well as history, psychology and sociology. The required courses are listed below:

Required Courses

†PS 238 Legal Procedure I
†PS 240 Legal Bibliography & Resources (prerequisite for PS 440)
†PS 440 Legal Research

9 additional credit hours from the courses in the Institute of Law and Public Affairs. Institute courses are designated by a dagger (†) in the course descriptions section.

Minor in Legal Affairs

The legal affairs minor in the Institute of Law and Public Affairs prepares students for positions as office managers, administrative assistants, legal investigators, public policy research assistants, public policy library assistants and legislative researchers in private and public law firms and governmental agencies. Students acquire specific skills which will enable them to do important legal work under the supervision of practicing attorneys. The legal affairs minor also prepares students for positions in the judicial system and for research positions and clerkships in the law libraries of the state. Courses are selected in consultation with a faculty adviser.

Minor in Public Affairs

The public affairs minor in the Institute of Law and Public Affairs is directed towards providing training for civil service positions at all levels of government. The goal of such training is to provide more effective public administrators and to introduce creativity into the profession of public service. The public affairs minor will take a problem-solving approach to the discipline as students will be conducting basic, in-depth research on problems of governmental agencies. Students in this minor will be able to develop valuable insights into the nature of the public policy process from the vantage point of the bureaucracy.

Courses are selected in consultation with a faculty adviser.

Department of Psychology

Chairman: Thomas L. Mentzer, Ph.D.

Professors: Robert D. Dugan, Ph.D., Ohio State University; Robert J. Hoffnung, Ph.D., University of Cincinnati; Arnold Hyman, Ph.D., University of Cincinnati; Thomas L. Mentzer, Ph.D., Brown University; Michael W. York, Ph.D., University of Maryland

Associate Professors: Michael Morris, Ph.D., Boston College; Benjamin B. Weybrew, Ph.D., University of Colorado

Assistant Professor: Gordon R. Simerson, Ph.D., Wayne State University

Psychology faces the questions that are of most immediate concern to the individual: problems such as personal identity, the social context, normalcy versus deviance and behavior change. As a science, psychology is devoted to the understanding, prediction and control of behavior.

Our dedication to these goals requires that we study behavior from a number of viewpoints—development, learning, social, physiological, abnormal personality—each fascinating in its own right. The student's attention also is drawn to the many settings in which behavior occurs, from the family to the laboratory, from the clinic to the marketplace.

This great diversity ensures that the study of psychology will interrelate well with other courses in the humanities and sciences.

The undergraduate program in the department of psychology combines basic science and applications to prepare students for further professional training in psychology or for careers in human services delivery, law, education, business and industry.

The program features specialty concentrations in community-clinical psychology and industrial/organizational psychology for those students who have well-defined professional goals. The general psychology concentration permits students to tailor their preparation toward other specialty areas. Psychology majors are encouraged to broaden their preparation by taking courses or minors in sociology, political science, social welfare, management, computer science, criminal justice, mathematics and biology.

The psychology major develops skills in design and analysis of research and effective communication through the study of statistics, experimental methods, psychological measurement and psychological theory. Through involvement with behavior therapy and community psychology field work, the student can confront behavior problems in a more direct, practical fashion. The department feels that it is only through a thorough grounding in basic skills and principles that students can effectively realize their own goals.

The psychology program benefits from a psychology laboratory building on the main campus. The laboratory contains facilities for student and faculty research with human and animal subjects. Specialized apparatus permits the study of human and animal learning, sensory capacities, social processes and biofeedback control.

The University of New Haven also offers the master of arts degree in community psychology and industrial/organizational psychology as well as a senior professional certificate in applications of psychology. For descriptions of these programs, see the Graduate School catalog.

Psychology Club

Students in psychology have the opportunity to participate in the Psychology Club. Its purpose is to provide opportunities both to socialize and to develop students' interests in the science and profession of psychology. Throughout the year, the club sponsors guest lecturers and a variety of field trips. All students are welcome to join.

Psi Chi Honor Society

Membership in the university chapter of Psi Chi, the national honor society, is open to students in the top 35 percent of their class who have completed at least nine credit hours of psychology with grades of **B** or better, and who are making the study of psychology one of their major interests.

Graduating seniors also may nominate themselves for the annually-awarded McGough psychology prize.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practice, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.A., Psychology

All students in the B.A. in psychology program must complete 120 credit hours. These courses must include the university core requirements and the courses listed below:

Required Courses

P 111 Introduction to Psychology
P 301 Statistics for Behavioral Sciences
P 305 Experimental Methods in Psychology
P 315 Human and Animal Learning
P 341 Psychological Theory
BI 121 General and Human Biology I
BI 122 General and Human Biology II
M 127 Finite Mathematics
SO 113 Sociology

3 credit hours of philosopy elective

It should be noted that M 127, P 301 and P 305 constitute a sequence of courses incorporating computer use. Those courses satisfy the core curriculum computer literacy requirement and must be taken in the above order.

The five psychology courses listed above totalling 16 credit hours are required of all psychology majors. To complete the major, the student must complete one of the three 27 credit-hour concentrations below. It should be noted that P 211, The Psychology of Effective Living, cannot be used to satisfy the requirements for the psychology major.

Community-Clinical Psychology Concentration

P 216 Psychology of Human Development
P 330 Introduction to Community Psychology
P 336 Abnormal Psychology
P 350 Human Assessment
P 375 Foundations of Clinical/Counseling Psychology
*P 331 *or* P 332 Community-Clinical Psychology Practicum
*P 351 Behavior Therapies
*P 370 Psychology of Personality

3 credit hours of a psychology elective

Courses marked by an asterisk (*) are required unless the student's adviser authorizes a substitution.

Industrial/ Organizational Psychology Concentration

P 212 Business and Industrial Psychology
P 306 Psychology Laboratory
P 321 Social Psychology
P 350 Human Assessment
P 355 Organizational Behavior
P 356 Psychology of Training and Development

3 credit hours of a psychology elective

General Psychology Concentration

The general psychology concentration consists of 27 credit hours of psychology electives beyond the required courses.

Minor in Psychology

Psychology, perhaps more than any other subject, relates closely to many other disciplines. A minor in psychology prepares you for graduate study in the field and can add another dimension to your studies in other programs at the university. A total of 22 credit hours is required for a minor in psychology.

Required Courses

P 111 Introduction to Psychology
P 301 Statistics for Behavioral Sciences (with laboratory)
P 305 Experimental Methods in Psychology

12 additional credits of psychology electives

There are two exceptions to the minor program described above: business students whose programs require QA 216 will be permitted to substitute QA 216 for P301. For those students the minor totals 21 credit hours; and students whose programs require SO 250, Research Methods, may substitute another psychology course for P 305. It should be noted that P 211, The Psychology of Effective Living, cannot be used to satisfy the requirements for the psychology minor.

Department of Sociology and Social Welfare

Chairman: Allen Sack, Ph.D.

Professors: Faith H. Eikaas, Ph.D., Syracuse University; Walter Jewell, Ph.D., Harvard University; Allen L. Sack, Ph.D., Pennsylvania State University

Associate Professors: Judith Bograd Gordon, Ph.D., University of Michigan

Sociology is the study of social life and the social causes and consequences of human behavior. Sociology's subject matter ranges from analysis of families, corporations, cities and sports to sex, death, race and other phenomena. The sociological perspective is empirically grounded and broad enough to be relevant to those considering careers in related fields such as research, governmental service, social work, personnel work, advertising, law, medicine, journalism, social gerontology and industry.

Career preparation is one focus of the department and students will select or be assigned an academic adviser early in the major so a personalized program can be constructed.

Whether the student interest is in gaining an appreciation of the theories and methods of sociology for their own sake or in specified career preparation, a major in sociology will be of great benefit for students who become engaged both in finding out more about the social world in which we live and in applying sociology to shape both the social world and their own.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practice, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.A., Sociology

All students in the B.A. in sociology program must complete 120 credit hours. These courses must include the university core requirements listed earlier in the catalog, and 33 credit hours of sociology courses, including the courses listed below:

Required Courses

SO 113 Sociology
SO 114 Contemporary Social Problems *or* SO 214 Deviance
SO 250 Research Methods
SO 413 Social Theory
SO 440 Undergraduate Seminar

15 credit hours of sociology courses (9 credit hours must be 300-level or above)
3 credit hours of statistics

Minor in Sociology

Students must take 18 credit hours to minor in sociology. Students should consult with a faculty adviser to select the nine credit hours of unspecified sociology courses. The adviser will suggest a combination of courses which focus on the student's interests and concerns. The required courses are listed below:

Required Courses

SO 113 Sociology
SO 250 Research Methods
SO 413 Social Theory

9 credit hours of sociology (two at the 300-level or above, selected with your adviser)

Minor in Anthropology

Students must take 18 credit hours to minor in anthropology. Students should consult with a faculty adviser to plan their program. The required courses are listed below:

Required Courses

SO 220 Physical Anthropology and Archaeology
SO 221 Cultural Anthropology
SO 250 Research Methods *or* SO 450 Research Seminar

9 credit hours of anthropology

Social Welfare

Acting Coordinator: Allen L. Sack, Ph.D.

The department offers a bachelor of arts degree with a major in social welfare which focuses on integrating a student's knowledge of the social welfare system, human behavior and the social environment, the social work profession, social research, practice skills and practice experience in preparation for beginning social work practice in a variety of settings and institutions such as state and local social service agencies, child welfare programs, group homes, crisis intervention programs, medical social work departments and police and correctional human programs. Students have been assigned responsibilities in various programs through the practice of casework, group work, social treatment, community organization, research administration and policy development.

B.A., Social Welfare

The curriculum is designed to meet the educational needs of students interested in social work careers, of students who are preparing for graduate professional education in social work, of students who wish to be informed about social welfare needs and services with a view to voluntary participation in community social welfare programs, and of students interested in preparing for graduate education in sociology or related fields such as counseling, gerontology, law, urban planning and health service administration.

All students in the B.A. in social welfare program must complete 120 credit hours. These courses must include the university core requirements listed earlier in the catalog, and a minimum of 27 credit hours of study in social welfare including two semesters (6 credit hours) in a field placement, a social service agency in the New Haven area. A professional person at the agency trains, supervises and evaluates each student. Seminars are held weekly to facilitate the integration of the theory learned in class and the practice methods used in the field. Each student masters a body of theory and applies this knowledge and skill to human problems in their field placement.

Electives are selected in consultation with an adviser and should be chosen to complement both the personal needs and professional goals of the student. The required courses are listed below:

Required Courses

SO 113 Introduction to Sociology
SO 214 Deviance *or* SO 114 Contemporary Social Problems
SO 250 Research Methods
SW 220 Introduction to Social Welfare
SW 340 Group Dynamics
SW 350 Social Welfare as a Social Institution
SW 401 Field Instruction I
SW 402 Field Instruction II
SW 415 Methods of Intervention I
SW 416 Methods of Intervention II
SW 475 Issues in Social Work
P 216 Psychology of Human Development
P 301 Statistics for the Behavioral Sciences
P 336 Abnormal Psychology

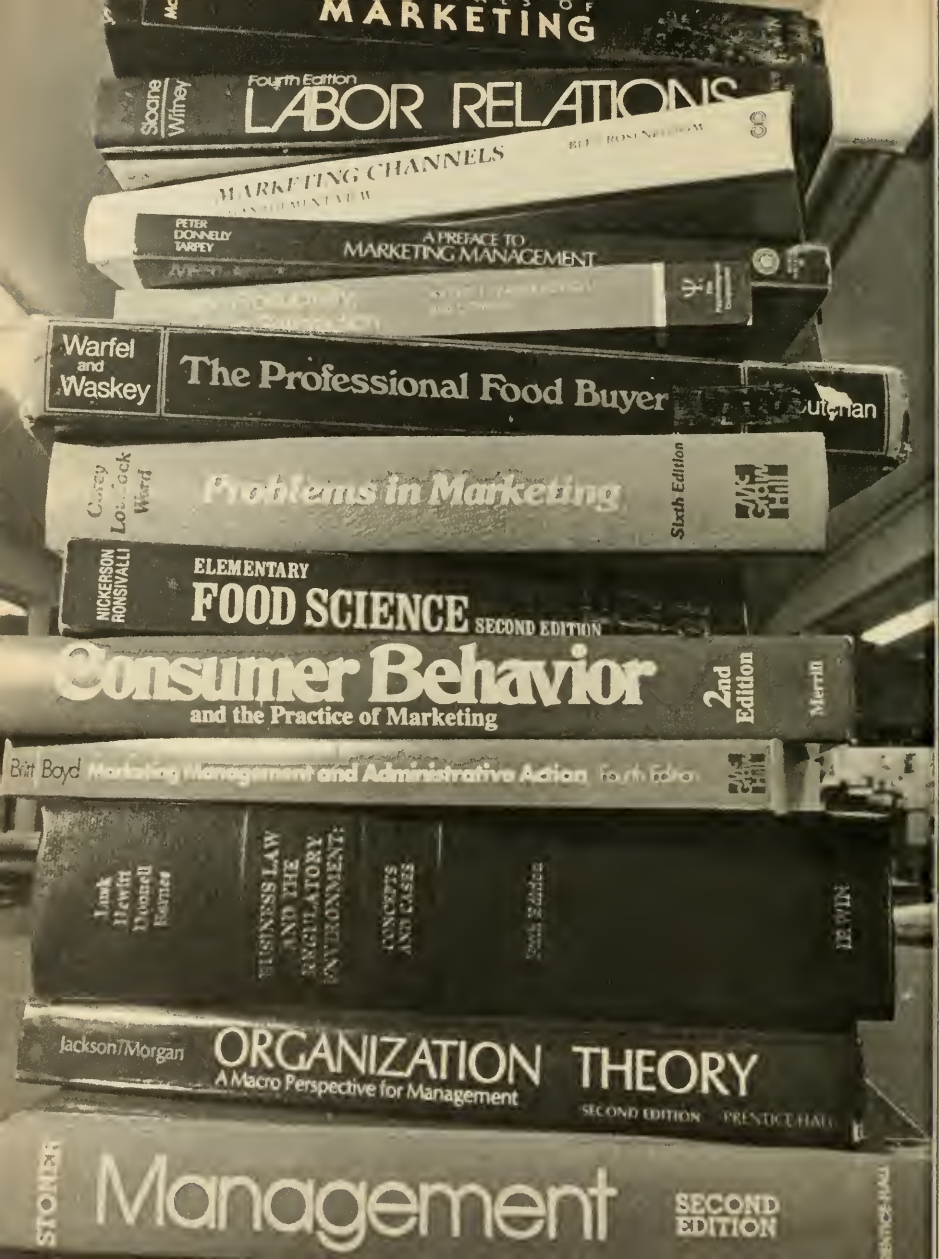
3 credit hour elective

Minor in Social Welfare

Students interested in a minor in social welfare are required to complete 18 credit hours of social welfare courses including those listed below:

Required Courses

SW 220 Introduction to Social Welfare
SW 401 Field Instruction I
SW 402 Field Instruction II
SW 415 Methods of Intervention I
SW 416 Methods of Intervention II
SW 475 Issues in Social Work


MARKETING
Fourth Edition
LABOR RELATIONS
Sloane
Witney
MARKETING CHANNELS
PETER
DONNELLY
TARPEY
A PREFACE TO
MARKETING MANAGEMENT
Warfel
and
Waskey
The Professional Food Buyer
Problems in Marketing
Sixth Edition
NICKERSON
RONSIVALLI
ELEMENTARY
FOOD SCIENCE
SECOND EDITION
Consumer Behavior
and the Practice of Marketing
2nd
Edition
Britt Boyd
Marketing Management and Administrative Action
Fourth Edition
Lusk
Hewitt
Donnell
Barnes
BUSINESS LAW
AND THE
REGULATORY
ENVIRONMENT:
CONCEPTS
AND CASES
IRWIN
Jackson/Morgan
ORGANIZATION THEORY
A Macro Perspective for Management
SECOND EDITION
PRENTICE-HALL
STONER
Management
SECOND
EDITION

SCHOOL OF BUSINESS

Marilou McLaughlin, Ph.D., dean

As the business world rapidly grows more complex, the need increases for a sophisticated and scientific approach to business, government and other organizational forms. The primary objective of the UNH business school is to prepare students for responsible and important jobs in management. A post-industrial society such as ours requires imaginative, analytical people. To meet this need, the School of Business provides a broad professional education preparing students to assume significant managerial positions. The curriculum emphasizes analytical tools needed to solve the intricate problems of today's organizations.

Graduate programs in business are primarily professional degree programs in which the major objective is to develop practitioners of business and administration. Many men and women who are enrolled are at the same time employed in various public and private organizations and are working toward their degrees on a part-time basis.

Programs

Bachelor of Science

Accounting
- Financial Accounting
- Managerial Accounting

Air Transportation Management
Business Administration
- Shipyard Management (career minor)

Business Economics
Communication
Criminal Justice
- Law Enforcement Administration
- Correctional Administration
- Forensic Science
- Security Management
- Law Enforcement Science

Finance
Human Resources Management
International Business
Management Information Systems
Management Science
Marketing
Public Administration

Associate in Science

Business Administration
Communication
Criminal Justice
- Correctional Administration
- Law Enforcement Administration

Certificate Programs

Economics
Law Enforcement Science
Mass Communication
Quantitative Analysis
Security Management

Master of Business Administration

Master of Business Administration for Executives (EMBA)

Master of Public Administration

Master of Science

Accounting
Criminal Justice
Forensic Science
Industrial Relations
Taxation

Doctor of Science in Management Systems

Senior Professional Certificates

Accounting and Taxation
Economic Forecasting
Finance
General Management
Human Resources Management
International Business
Marketing
Public Management
Quantitative Analysis

General Policies in the School of Business

- Each student will be assigned an academic adviser.
- A student may select a business major after consultation with the adviser or the appropriate chairman.
- A student may select a minor after consultation with the adviser or the appropriate chairman.
- No coordinated course offering credit will be accepted for UNH juniors or seniors from two-year colleges. (See also "Coordinated Course" section on page 40.)
- To receive a degree from the School of Business, the last thirty credits must be awarded by the University of New Haven.
- A minimum of 121 semester hours is required for graduation.

Admission Criteria

An applicant for admission to business programs must be a graduate of an approved secondary school or the equivalent. While no set program of high school subjects is prescribed, an applicant must meet the standard of the university with respect to the high school average. Applicants must present 15 acceptable units of satisfactory work, including nine or more units of college preparatory subjects. Satisfactory scores on College Entrance Examination Board Scholastic Aptitude Tests (S.A.T.) or American College Testing (A.C.T.) program tests are required. See the Admission section in the beginning of this catalog.

University Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the university core curriculum. See page 67 for the list of requirements. It should be noted that, whenever possible, liberal arts and lower division requirements should be completed by the end of the sophomore year.

Common Courses for Business Programs

Students earning bachelor degrees in School of Business programs must complete the basic business curriculum shown below, as well as the university core requirements and the course requirements for their chosen major.

Required Courses

A 101 Introduction to Financial Accounting*
A 102 Introduction to Managerial Accounting*
CO 100 Human Communication
EC 100 Economic History of the U.S.
EC 133 Principles of Economics I
EC 134 Principles of Economics II
IB 312 International Business
LA 101 Business Law for Non-Accounting Majors
MG 125 Management and Organization
MK 105 Principles of Marketing

1 public administration or management course
1 advanced economics course
6 credits of statistics and/or research methods courses

*Accounting majors and students who wish to take advanced accounting courses must substitute A 111 and A 112, which are prerequisites for all advanced accounting courses.

Department of Accounting/Finance

Chairman: Robert E. Rainish, Ph.D.

Professors: Satish Chandra, J.S.D., Yale University; William S. DeMayo, C.P.A., M.B.A., New York University

Associate Professors: Ernest M. Dichele, C.P.A., LL.M., Boston University School of Law; Robert McDonald, C.M.A., M.B.A., New York University; Robert Rainish, Ph.D., City University of New York; Richard Reimer, C.P.A., M.S., Columbia University; Henry D. Vasileff, Ph.D., University of Toronto; Robert E. Wnek, C.P.A., LL.M., Boston University School of Law

Assistant Professors: Michael Rolleri, C.P.A., M.B.A., University of Connecticut; Michael Tucker, M.B.A., Boston University

Practitioners-in-Residence: Arthur Donkin, M.B.A., Rutgers University; Jose Oaks, C.P.A., M.B.A., New York University; David Rubin, C.P.A., M.B.A., University of Cincinnati

The accounting/finance department is responsible for courses in accounting, business law, finance and taxation. While the study of accounting and finance has its roots in economic theory, the courses emphasize practical application to real world problems.

The study of accounting emphasizes the economic decision-making process as well as the principles and procedures used to produce the information required by decision makers. Accounting promotes an appreciation for not only the nature of accounting information but also the use of that information in the complex process of decision making by individuals, business firms and government. The department of accounting/finance at the University of New Haven seeks to serve the educational needs of those involved in all areas of accounting—public, private, or governmental.

Students must select from a financial accounting or managerial accounting program of study.

Finance, as an area of study, is designed to promote an analytical appreciation of the financial system and the financial decision-making process in which society, through its individuals, business firms and governments, is continually engaged.

In particular, the study of finance provides a structured analysis of the financial system and the financial decision-making process as determinants of the economic wealth of the individual, the business firm and the nation. The study of finance enables the student to pursue the preparation required for a number of financial decision-making positions in government and industry, including the entire variety of financial institutions.

There are many career opportunities for students in the business world, government and academia. Accounting and finance professionals are needed by consulting firms, public accounting firms and private industry, as well as by federal, state and local governments. Because of the practical orientation of the program, future business entrepreneurs can benefit by the background obtained in these programs.

The accounting department at the University of New Haven offers courses at the bachelor and master's level for the study of accounting. The department also offers undergraduate career minors in real estate and insurance to students majoring in financial or managerial accounting. The career minor is designed to offer specialized study to those planning careers in the real estate or insurance fields.

Accounting students may select electives from other disciplines such as computer science, economics and finance.

On the graduate level, the department offers programs leading to a master of science in accounting and in taxation. A concentration in accounting is also available to students enrolled in the master of business administration program.

Graduate course offerings for the study of finance may be selected to comprise a concentration in finance by the student pursuing the master of business administration degree. Complete information about these graduate programs is available in the Graduate School catalog.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.S., Financial Accounting

The financial accounting major is selected by those students wishing to pursue a career in public accounting leading to the certified public accountant (C.P.A.) license. The integration of business law, taxation and finance into the program provides the student with the necessary academic background to meet the challenges of the accounting profession.

Required Courses

Students earning a B.S. in accounting are required to complete 121 credit hours including the university core curriculum and those courses listed below:

A 111	Introductory Accounting I
A 112	Introductory Accounting II
A 220	Intermediate Financial Accounting I
A 221	Intermediate Financial Accounting II
A 222	Intermediate Financial Accounting III
A 223	Cost Accounting I
A 224	Cost Accounting II
A 331	Advanced Financial Accounting I
A 333	Auditing Principles
A 334	Auditing Principles
A 335	Federal Income Taxation I
A 336	Federal Income Taxation II
A 337	Federal Income Taxation III
A 350	Accounting Information Systems
LA 111	Business Law I
LA 112	Business Law II

B.S., Managerial Accounting

The managerial accounting major is selected by students wishing to pursue a career in private accounting as management accountants including the possible attainment of the certificate of management accounting (C.M.A.). The program provides for courses at the advanced levels in finance and economics, in order to prepare the student for the kinds of decisions likely to be made within the organizational structure.

Required Courses

Students earning a B.S. in managerial accounting are required to complete 121 credit hours including the university core curriculum and those courses listed below:

A 111	Introductory Accounting I
A 112	Introductory Accounting II
A 220	Intermediate Financial Accounting I
A221	Intermediate Financial Accounting II
A 222	Intermediate Financial Accounting III
A 223	Cost Accounting I
A 224	Cost Accounting II
A 225	Advanced Managerial Accounting
A 240	Financial Statement Analysis
A 331	Advanced Financial Accounting I
A 333	Auditing Principles
A 335	Federal Income Taxation I
A 336	Federal Income Taxation II
A 350	Accounting Information Systems
EC 420	Applied Economic Analysis
FI 229	Corporate Financial Management
QA 333	Advanced Statistics

B.S., Finance

Required Courses

Students earning a B.S. in finance are required to complete 121 credit hours including the university core curriculum and those courses listed below:

FI 113	Business Finance
FI 214	Principles of Real Estate
FI 229	Corporate Financial Management
FI 230	Investment Analysis
FI 341	Financial Decision Making
FI 345	Financial Institutions and Capital Markets
A 221	Intermediate Financial Accounting I
A 222	Intermediate Financial Accounting II
A 350	Accounting Information Systems
EC 314	Public Finance and Budgeting
EC 336	Money and Banking
EC 340	Microeconomic Analysis
EC 341	Macroeconomic Analysis
EC 420	Applied Economic Analysis
QA 333	Advanced Statistics

Please note: A student majoring in finance will also minor in economics and quantitative analysis. The individual can add an accounting minor to the above.

Minor in Accounting

Requirement for the accounting minor include a total of 18 semester hours is required for the accounting minor. Students must complete the following courses:

A 111	Introduction to Accounting I
A 112	Introduction to Accounting II
A 220	Intermediate Accounting I
A 221	Intermediate Accounting II

Two additional accounting courses with consent of the undergraduate accounting co-ordinator

Minor in Finance

Requirements for the finance minor include a total of 18 semester hours is required for the finance minor. Students must complete the following four courses:

FI 113	Business Finance
FI 229	Corporate Financial Management
FI 230	Investments
FI 345	Financial Institutions and Markets

In addition, after conferring with faculty, the student must select two of the following courses:

FI 325	International Finance
FI 341	Financial Decision Making
EC 341	Macroeconomic Analysis
EC 336	Money and Banking

Department of Communication

Chairman: Jean-Richard Bodon, Ph.D.

Professor: M.L. McLaughlin, Ph.D., University of Wisconsin

Associate Professors: Jean-Richard Bodon, Ph.D., Florida State University; Steven A. Raucher, Ph.D., Wayne State University

Assistant Professors: Kathleen Long, M.S., Southern Illinois University; James C. Paty, M.A., University of Alabama;

The communication programs at the University of New Haven allow students to develop their interpersonal and mass communication skills and awareness.

The programs for communication majors are built around studies designed for students with a wide range of interests. Whether students envision their future in communication to be that of a television camera person, an on-the-air news broadcaster, a researcher or producer for documentary films or a researcher investigating why people say what they say and the effects of those utterances on society, it is the department's objective to assist students attain their goals.

The department of communication works closely with local media and with other departments in the university. Students and faculty have a close working relationship with the management and staff of WNHU-FM, the student radio station of the University of New Haven, and are involved in programming for the local cable television system.

Students majoring in communication at the University of New Haven will acquire the professional skills needed to enter the field after earning their undergraduate degrees. The degree programs allow sufficient flexibility to accommodate any communication major's career objective.

The department of communication enjoys institutional memberships in the Connecticut Broadcasters Association and the International Association of Business Communicators. Faculty members and some communication students belong to such professional organizations as the International Communication Association, the Sigma Delta Chi professional journalism society, the Speech Communication Association, the American Film Institute and the Broadcast Educators Association.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.S., Communication

The student majoring in communication at the University of New Haven will have common programs with other majors for the first several terms. The initial communication courses introduce the students to the broad field of communication and the processes involved in the study of human and mass interaction. With this initial orientation complete, the student is better qualified to make an intelligent choice of specialty within the department.

The bachelor of science degree program, offered through the School of Business, emphasizes the production, technical aspects and management of film, video, audio and journalism. The student majoring in this program is usually oriented toward programming, production, media management, on-the-air skill development and writing.

Required Courses

All students earning a B.S. in communication must complete 121 credit hours including the university core curriculum. These courses must include 39 credit hours of communication courses including those listed below:

CO 101 Fundamentals of Mass Communication
CO 103 Audio in Media
CO 302 Social Impact of Media
J 101 Journalism I

TV or film sequence:

CO 214 Elements of Film,
CO 220 Film Production I *and*
CO 320 Film Production II

or

CO 212 Television Production I,
CO 312 Television Production II *and*
CO 412 Advanced Television Production

B.A., Communication

For more information on the B.A. in communication, see page 84 in the School of Arts and Sciences section of this catalog.

A.S., Communication

Upon successful completion of the first two years of the four-year bachelor of science program in communication, students may petition to receive an associate in science degree with a major in communication. Students should consult with an adviser for specific information.

Minor in Communication

A total of 18 semester hours of communication course credits must be earned in order for a student to declare the field as a completed minor area of study. This work must include CO 100 Human Communication. The balance of the minor program is worked out in individual conference with the student and his or her communication department adviser.

Communication Certificate Programs

Coordinator: Jean-Richard Bodon, Ph.D.

The communication department offers certificates in journalism and mass communication. Students must complete 15 credit hours to earn a certificate. Students may choose to take these courses for credit or non-credit. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, if you are admitted, the credits earned may be applied toward the requirements for a degree program.

Mass Communication Certificate

This program offers options in television production, radio production, writing for media, interpersonal communication or a combination of radio/television and film. All students are required to take 15 credit hours, including the courses listed below:

Required Courses

CO 100 Human Communication
CO 101 Fundamentals of Mass Communication
CO 302 Social Impact of Media

Journalism Certificate

For more information on journalism certificate requirements refer to the School of Arts and Sciences under the communication programs.

Department of Economics and Quantitative Analysis

Acting Chairman: Thomas Katsaros, Ph.D..

Professors: Phillip Kaplan, Ph.D., The Johns Hopkins University; William S.Y. Pan, Ph.D., Columbia University; Joseph A. Parker, Ph.D., University of Oklahoma; Alan Plotnick, Ph.D., University of Pennsylvania; Franklin B. Sherwood, Ph.D., University of Illinois; John J. Teluk, M.A., Free University of Munich

Associate Professors: George Karatzas, Ph.D., New York University; Ward Theilman, Ph.D., University of Illinois; Warren J. Smith, M.B.A., Northeastern University

Assistant Professor: Linda R. Martin, Ph.D., University of South Carolina

Lecturer: Mary Martha Woodruff, M.A., Murray State University, M.S., University of New Haven

Economics courses provide a basis for an understanding of economic structures, a wide range of domestic and international issues and trends in the economic life of modern societies. These courses offer training in analysis of economic problems as an aid to the evaluation of economic policies.

Introductory courses are designed to provide the foundation of economic knowledge which every citizen in a modern complex society should have so they may understand the decisions of individual economic units and the operation of a national economy as a whole.

Advanced courses are designed primarily for economics and business majors. They cover in depth specific economic topics. They also prepare students for economic research and management positions in financial institutions, individual organizations, government or graduate study and teaching.

The department of economics and quantitative analysis has two major objectives: to function as a service department for other departments in the School of Business and other schools of the university and to offer a specialized education to students majoring in economics.

Students majoring in economics may choose either a bachelor of science in business economics or a bachelor of arts in economics.

B.S., Business Economics

The University of New Haven program in business economics is designed to prepare students for research or executive positions in business or government.

Required Courses

Students earning a B.S. in business economics must complete 121 credit hours including the university core curriculum and those courses listed below:

EC 133 Principles of Economics I
EC 134 Principles of Economics II
EC 250 Economics and United States Industrial Competitiveness
EC 311 Government Regulation of Business
EC 336 Money and Banking
EC 341 Macroeconomic Analysis
EC 420 Applied Economic Analysis

Plus two courses chosen from:

EC312 Contemporary Economic Problems
EC 314 Public Finance and Budgeting
EC 342 International Economics
EC 350 Economics ad Labor Relations

Plus one course chosen from:

EC 300 Economics of Energy and Environment
EC 340 Economic Development

B.A., Economics

For information about the B.A. program in economics, see page 86 in the School of Arts and Sciences section of this catalog.

Minor in Economics

Eighteen credit hours of economics courses are required for a minor including those listed below:

Recommended Courses

EC 133 Principles of Economics I
EC 134 Principles of Economics II
EC 341 Macroeconomic Analysis
EC 420 Applied Economic Analysis

Plus 6 credits of economics electives to be chosen from:

EC 340 Microeconomics
EC 312 Contemporary Economic Problems
EC 314 Public Finance and Budgeting
EC 345 Comparative Economic Systems
EC 350 Economics of Labor Relations

Economics and Quantitative Analysis Certificate Programs

The department offers two certificate programs. Students are required to complete fifteen credit hours for each certificate. Courses may be taken for credit or on a non-credit basis. If the latter, it is not necessary to apply for formal admission to the university. However, any credit earned may be applied to a formal degree program.

Certificate in Economics

Required Courses

EC 133 Principles of Economics I
EC 134 Principles of Economics II
EC 336 Money and Banking
EC 341 Macroeconomic Analysis
EC 420 Applied Economic Analysis

Certificate in Quantitative Analysis

Required Courses

QA 118 Business Mathematics
QA 216 Probability and Statistics
QA 250 Quantitive Techniques II
QA 314 Field Research
QA 333 Advanced Statistics

Department of Management

Chairman: Wilfred Harricharan, Ph.D.

Professor: Wilfred R. Harricharan, Ph.D., Cornell University

Associate Professors: Lynn Ellis, D.P.S., Pace University; David Khalifa, Ph.D., Pennsylvania State Universty

Assistant Professors: Frank K. Flaumenhaft, M.B.A., New York University; Charles Wankel, M.B.A., New York University

Instructor: Richard Bassett, M.B.A., University of New Haven

At this time in history when all of society's systems—governmental, technological, societal, educational, industrial and military as well as business—are becoming more sophisticated and complex, the need for skilled managers has never been greater. As automation frees people from having to deal directly with materials and the computer lessens the burden of processing data, today's managers are able to direct their energies to planning, organizing, directing and controlling—the four major functions of management.

The management programs at UNH seek to provide students with the foundations of knowledge and skill necessary for moving to

positions of responsibility in management. The theories and methods of analyzing decisions studied prepare students for entry-level jobs, as well as sharpen the skills of those already holding organizational positions. The underlying concept is to combine adequate specialization with the integrative point of view required of the manager.

The department of management offers degree programs in the following areas of specialization: associate of science degree program in business administration and bachelor of science degree programs in air transportation management, business administration, management information systems, management science and human resources management. The department also offers a career minor in shipyard management.

Management Club

The department of management sponsors a student chapter of the Society for the Advancement of Management (SAM) which is open to students interested in the art and science of professional management. This organization provides students and faculty with a professional and social experience that cannot be found in the classroom. Speakers, films, discussion groups and other activities are scheduled and open to all those interested in attending.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.S., Air Transportation Management

The aviation industry attracts individuals from many diverse backgrounds with a variety of skills. Many dynamic career opportunities exist for students interested in aviation. These include professional piloting, as well as various aspects of management and engineering in general aviation, government, airlines and manufacturing.

The bachelor of science degree in air transportation management provides the student selecting the flight option with the technical aviation background required of the professional pilot. A strong foundation of management and specific aviation managment courses providing knowledge and skills required of pilots and executives in the aviation industry is an integral part of this program.

A two-year associate in science degree in aviation science is also offered by the university within the School of Professional Studies and Continuing Education.

Required Courses

Students earning the B.S. in air transportation management must complete 121 credit hours or 131 hours if the flight option is chosen. (Flight option courses are marked *.) These courses must include the university core curriculum and the courses listed below:

AE 100 Aviation Science—Private
AE 105 Primary Flight—Solo*
AE 110 Aviation Meteorology
AE 115 Private PilotFlight*

AE 130 Aviation Science—Commercial
AE 135 Commercial Flight I*
AE 140 Concepts of Aerodynamics
AE 145 Commercial Flight II*
AE 200 Aviation Science—Instrument
AE 205 Commercial Flight III*
AE 210 Aircraft Powerplants, Systems and Components
AE 230 Flight Instructor Seminar
AE 235 Instructor Flight *or* AE 245 Multi-Engine Rating*
AE 310 Air Transportation Management
AE 400 Airport Management
AE 410 Corporate Aviation Management
AE 430 Aviation Safety Seminar
MG 350 Advanced Management
MK 470 Business Logistics

4 business concentration electives

M 115 & 117 may substitute for QA 118 & 128 in the basic business curriculum.

B.S., Business Administration

In order to function effectively in a variety of management situations, administrators should be conversant with all major areas of management. Moreover, they should have a thorough understanding of the interrelationships which exist among the different functional groups within organizations. This point of view is essential for managers who are to participate effectively with others in the administrative group and who are to administer activities in their areas of responsibility in the best interests of the entire organization.

Required Courses

Students earning the B.S. in business administration must complete 121 credit hours. These courses must include the university core curriculum and the courses listed below:

MG 100 Introduction to Business
MG 125 Management and Organization
MG 231 Industrial Relations
MG 350 Advanced Management
MG 455 Managerial Effectiveness
MG 512 Contemporary Issues in Business and Society
MG 515 Management Seminar
MG 550 Business Policy
MK 413 International Marketing Management

B.S., Management Information Systems

Management use of quantitative methods has been increasingly reinforced by the application of high speed computer technology and techniques in organizations. The advances in simulation, mathematic.. programming, decision theory and computer control systems have generated a need for personnel well trained in both the management sciences and the computer and information sciences.

Required Courses

Students earning the B.S. in management information systems must complete 121 credit hours. These courses must include the university core curriculum and the courses listed below:

CS 105 Introduction to COBOL
CS 108 Introduction to BASIC
CS 225 Advanced COBOL
MG 100 Introduction to Business
MG 350 Advanced Management
MG 512 Comtemporary Issues in Business and Society
MG 550 Business Policy
MS 200 Business Systems Analysis
MS 300 Micro Computers for Managers
MS 400 Management Planning and Control Systems
MS 460 Information Systems for Operations & Management

B.S., Management Science

The purpose of this major is to make available to the student a program that combines classical education in organizational management with modern training in quantitative methods. The fundamental assumption on which the program is based is that it is desirable for a student to acquire a knowledge of business and management with literacy and experience in the areas of quantitative techniques.

Advanced work in management consists of case analysis, small group discussions, seminars, simulation exercises ("management games") and field studies in actual organizations.

Required Courses

Students earning the B.S. in management science must complete 121 credit hours. These courses must include the university core curriculum and the courses listed below:

MG 100 Introduction to Business
MG 125 Management and Organization
MG 231 Industrial Relations
MG 350 Advanced Management
MG 400 Project Management
MG 455 Managerial Effectiveness
MG 512 Contemporary Issues in Business and Society
MS 460 Information Systems for Operations and Management
MS 560 Business Systems Simulation
EC 420 Applied Economic Analysis

B.S., Human Resources Management

The major responsibility of human resources management is to attract, develop and retain qualified personnel for the organization. The major applies the research of the behavioral and social sciences in manpower planning, personnel selection, compensation, planning adjustment to change and the development of organizational performance. Industrial relations examines the organization of workers and union-management relations.

Majors in this field study established and developing systems for the resolution of conflict and the building of viable, accommodative relationships between employers and employees. Emphasis is placed upon the interaction of labor, management and the government in establishing rates, hours and conditions of work. The approach is keyed to an institutional analysis of collective manpower problems and issues within an economic and organizational framework.

Required Courses

Students earning the B.S. in human resources management must complete 121 credit hours. These courses must include the university core curriculum and the courses listed below:

MG 100 Introduction to Business
MG 125 Managment and Organization
MG 231 Industrial Relations
MG 350 Advanced Management
MG 455 Managerial Effectiveness
MG 512 Contemporary Issues in Business and Society
EC 350 Economics of Labor Relations
CJ 203 Security Administration
CO 410 Management Communication Seminar

A.S., Business Administration

To earn the A.S. in business administration, students must complete 60 credit hours including those courses listed below:

Required Courses

A 111 Introductory Accounting I
A 112 Introductory Accounting II
CS 107 Introduction to Data Processing
E 105 Composition
E 110 Composition and Literature
EC 100 Economic History of the U.S.
EC 133 Principles of Economics I
EC 134 Principles of Economics II
HS 101 Foundations of the Western World
LA 101 Business Law for Non-Accounting Majors
MG 100 Introduction to Business
MG 125 Management and Organization
MK 105 Marketing
QA 118 Business Math
QA 128 Quantitative Techniques
QA 216 Probability and Statistics

Minor in Business Administration

A total of 15 semester hours of business course credits must be earned in order for a student to declare the field as a completed minor area of study. The courses required for a minor in business administration are listed below:

A 101 Introduction to Financial Accounting
IB 312 International Business
MG 100 Introduction to Business Administration
MK 105 Principles of Marketing
CO 410 Management Communication Seminar

Minor in Management

A total of 15 semester hours of business course credits must be earned in order for a student to declare the field as a completed minor area of study. The courses required for a minor in management are listed below:

MG 100 Introduction to Business Administration
MG 125 Management and Organization
MG 350 Advanced Management
MG 455 Managerial Effectiveness
MG 512 Contemporary Issues in Business and Society

Career Minor in Shipyard Management

The career minor in shipyard management is designed to give students majoring in management science specialized training in the managerial and planning skills needed in the shipbuilding industry today.

Required Courses

SM 410 World Shipbuilding
SM 412 Shipyard Management—Finance
SM 414 Shipyard Management—Planning and Control
SM 415 Shipyard Management—Marketing

Department of Marketing and International Business

Chairman: Wilfred Harricharan, Ph.D.

Professor: Thomas Katsaros, Ph.D., New York University

Associate Professors: Robert P. Brody, D.B.A., Harvard University; Bernard Wiener, M.B.A., New York University

Associate Professors: Michael Kublin, Ph.D., New York University; David Morris, Ph.D., Syracuse University

The study of marketing comprises both managerial and societal perspectives. Emphasis is placed heavily on the coordination of product, promotion, price and distribution policies optimally designed to relate the firm to its competitive environment. Societal dimensions include issues in consumer protection, legal and social responsibilities of the firm, and analyses of marketing's contribution to the total society.

International business is an interdisciplinary program which draws on areas of marketing, management, finance and economics in order to develop a multinational perspective on contemporary business opportunities throughout the world. It deals with the problems of developing and adapting business practices to operate within different economic, political and cultural systems.

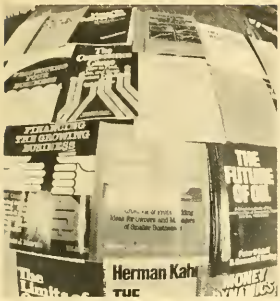
Marketing Clubs

The department of marketing and international business sponsors a student chapter of the American Marketing Association (AMA), which is open to students interested in the art and science of marketing. The student chapter provides students and faculty with a professional and social experience that cannot be found in the classroom. Speakers, films, discussion groups and other activities are scheduled and open to all those interested in attending.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.S., International Business



International business is an interdisciplinary program which draws on areas of marketing, management, finance and economics in order to develop a multinational perspective on contemporary business opportunities throughout the world. It deals with the problems of developing and adapting business practices to operate within different economies, different political systems and different cultures.

A background in international business prepares the student for careers in both the private and public sectors, as well as in international non-profit institutions.

Required Courses

Students earning a B.S. in international business must complete 121 credit hours. These courses must include the university core curriculum and the courses listed below:

MG 100 Introduction to Business
MG 350 Advanced Managment
MK 413 International Marketing Management
FI 113 Business Finance
FI 325 International Finance
IB 312 International Business
IB 321 Operation of Multinational Corporations
IB 549 International Business Policy

Plus two of the following:

PS 241 International Relations
EC 342 International Economics
EC 345 Comparative Economic Systems
EC 440 Economic Development

Students majoring in international business are advised to minor in a functional discipline, for example marketing or management.

B.S., Marketing

Marketing focuses on activities instrumental to the efficient flow of goods and services from producers to consumers. Marketing concepts are widely applied to government agencies, political campaigns, hospitals, and various other social organizations, as well as business and industry.

The study of marketing includes both managerial and societal perspectives. Managerial emphasis is placed heavily on the coordination of product, promotion, price and distribution policies optimally designed to relate the firm to its competitive environment. Societal dimensions include issues in consumer protection, legal and social responsibilities of the firm, and analyses of marketing's contribution to the total society.

Individual coursework is primarily designed to prepare majors for either a career in business or administration. Students may specialize in such areas as advertising, sales, logistics, marketing research, buyer behavior or marketing management.

Required Courses

Students earning a B.S. in marketing must complete 121 credit hours. These courses must include the university core curriculum and the courses listed below:

MK 105 Principles of Marketing
MK 205 Consumer Behavior
MK 302 Industrial Marketing

MK 307 Advertising and Promotion
MK 413 International Marketing Management
MK 442 Marketing Research and Information Systems
MK 460 Consumer Protection
MK 470 Business Logistics
MK 515 Marketing Management
MG 100 Introduction to Business
MG 350 Advanced Management
MG 455 Managerial Effectiveness
MG 512 Contemporary Issues in Business and Society
EC 340 Microeconomic Analysis
FI 113 Business Finance
IB 312 International Business
QA 216 Probability and Statistics

Other courses to be selected with an adviser

Minor in International Business

A total of 18 semester hours of business course credits must be earned in order for a student to declare the field as a completed minor area of study. The courses required for a minor in international business are listed below:

IB 312 International Business
IB 321 Operation of Multinational Corporations
IB 549 International Business Policy
MK 413 International Marketing Management

Plus two of the following:

EC 345 Comparative Economic Stystems
EC 440 Economic Development
PS 241 International Relations
PS 281 Comparative Political Systems: Asia *or*
PS 282 Comparative Political Systems: Europe

Minor in Marketing

A total of 18 semester hours of business course credits must be earned in order for a student to declare the field as a completed minor area of study. The courses required for a minor in marketing are listed below:

MK 105 Principles of Marketing
MK 205 Consumer Behavior
MK 307 Advertising and Promotion
MK 442 Marketing Research and Information Systems
MK 515 Marketing Management

Plus a course in international business, with the approval of the chairman

Department of Public Management

Chairman: David A. Maxwell, J.D., C.P.P.

Criminal Justice

Coordinator of Undergraduate Studies: Gerald D. Robin, Ph.D.

Security Management Program: David A. Maxwell, J.D., coordinator

Forensic Science Program: R.E. Gaensslen, Ph.D., director; Henry C. Lee, Ph.D., practitioner-in-residence, chief criminalist–Connecticut State Police Forensic Science Laboratory

Professors: R.E. Gaensslen, Ph.D., Cornell University; L.Craig Parker, Ph.D., State University of New York at Buffalo; Gerald D. Robin, Ph.D., University of Pennsylvania

Associate Professors: Richard E. Farmer, Ed.D., Boston University; Lynn Hunt Monahan, Ph.D., University of Oregon

Assistant Professor: David A. Maxwell, J.D., University of Miami

Practitioners-in-Residence: Lloyd S. Goodrow, J.D., University of Connecticut; Henry C. Lee, Ph.D., New York University

Public Administration

Professor: Jack Werblow, Ph.D., University of Cincinnati.

Associate Professor: Charles N. Coleman, M.P.A., West Virginia University

Assistant Professor: Catherine Wiggins, Ph.D., New York University

Criminal Justice

The criminal justice system is a formal mechanism of control through which social order is maintained. The study of this system is approached in an interdisciplinary manner involving law, the physical sciences and the social sciences. Through the use of both conventional and innovative techniques, including lectures, written assignments, seminars, workshops, internships and independent research and study, an attempt is made to provide students with the opportunity to gain a wide variety of insights and experiences.

There is a full range of career opportunities available in criminal justice at the local, state and national levels. Because of its interdisciplinary approach, the study of criminal justice fills the needs of students seeking careers in teaching, research, and law, and of the inservice personnel seeking academic and professional advancement.

The department of public management at the University of New Haven offers courses from the associate to the master's level. Complete information about the master of science degree in criminal justice is available in the graduate catalog.

Undergraduate study of criminal justice concentrates on five major areas of study, enforcement administration, correctional administration, forensic science, law enforcement science and security management.

B.S., Criminal Justice –Law Enforcement Administration

This program prepares students for careers in federal, state and local law enforcement agencies, public and private security forces, planning agencies and other related settings. The curriculum focuses on the roles, activities and behaviors of people with regard to maintaining law and order, providing needed services, protecting life and property and planning and research.

Required Courses

Students earning the B.S. in criminal justice–law enforcement administration must complete 122 credit hours, including the university core curriculum and those courses listed below:

CJ 100	Introduction to Criminal Justice I
CJ 101	Introduction to Criminal Justice II
CJ 102	Criminal Law
CJ 201	Principles of Criminal Investigation
CJ 205	Interpersonal Relations
CJ 215	Introduction to Forensic Science
CJ 217	Criminal Procedures and Evidence I
CJ 218	Criminal Procedures and Evidence II
CJ 221	Juvenile Justice
CJ 300	History of Criminal Justice
CJ 301	Group Dynamics in Criminal Justice
CJ 311	Criminology
CJ 400	Criminal Justice Problems Seminar
CJ 402	Police in Society
CJ 501	Criminal Justice Internship
P 301	Statistics for Behavioral Sciences
P 336	Abnormal Psychology
PA 101	Public Administration
PS 332	Constitutional Law
SO 250	Research Methods

2 natural or physical science courses, one with laboratory
1 philosophy course
Electives chosen with adviser

B.S., Criminal Justice –Correctional Administration

This program is designed to prepare students for careers with federal, state, local and private correctional agencies and institutions. It is concerned with the treatment of offenders, administration, planning and research. The curriculum emphasizes law, social and behavioral sciences and research methodology.

Required Courses

Students earning the B.S. in criminal justice–correctional administration must complete 122 credit hours, including the university core curriculum and those courses listed below:

CJ 100 Introduction to Criminal Justice I
CJ 101 Introduction to Criminal Justice II
CJ 102 Criminal Law
CJ 205 Interpersonal Relations
CJ 209 Correctional Treatment Programs
CJ 217 Criminal Procedures and Evidence I
CJ 218 Criminal Procedures and Evidence II
CJ 221 Juvenile Justice
CJ 300 Foundations of Justice
CJ 301 Group Dynamics in Criminal Justice
CJ 310 Criminal Justice Institutions
CJ 311 Criminology
CJ 400 Criminal Justice Problems Seminar
CJ 408 Correctional Counseling I
CJ 409 Correctional Counseling II
CJ 501 Criminal Justice Internship
P 301 Statistics for Behavioral Sciences
P 336 Abnormal Psychology
P 370 Psychology of Personality
PA 101 Public Administration
PS 332 Constitutional Law
SO 250 Research Methods

2 laboratory courses in the natural or physical sciences
1 course in philosophy
Electives chosen with adviser

B.S., Criminal Justice –Forensic Science

Forensic science is a broad field in which physical and biological sciences are utilized to analyze and evaluate physical evidence related to matters of law. The aim of the program is to provide the appropriate education to men and women in the field of forensic science, as well as to those who are planning careers in forensic sciences. The curriculum is also of value to those in related fields whose professional work requires knowledge of scientific investigation methods.

Required Courses

Those students earning a B.S. in criminal justice–forensic science must complete 136 credit hours, including the university core curriculum and those courses listed below:

CJ 100 Introduction to Criminal Justice
CJ 102 Criminal Law
CJ 201 Principles of Criminal Investigation
CJ 204 Forensic Photography
CJ 215 Introduction to Forensic Science
CJ 303 Forensic Science Laboratory I
CJ 304 Forensic Science Laboratory II
CJ 311 Criminology
CJ 403 Advanced Forensic Science I *or* restrictive elective
CJ 404 Advanced Forensic Science II *or* restrictive elective
CJ 416 Seminar in Forensic Science
CJ 501 Internship *or* CJ 498 Research Project
BI 121 General and Human Biology I
BI 122 General and Human Biology II
BI 131 General and Human Biology Laboratory I
BI 132 General and Human Biology Laboratory II
BI 303 Histology *or* CH 331 Physical Chemistry I

BI 304 Immunology with Laboratory *or* BI 333 Medical Microbiology with Laboratory
BI 311 Genetics *or* restrictive elective
BI 320 Forensic Medicine *or* restrictive elective
BI 462 Biochemistry II with Laboratory *or* CH 332 Physical Chemistry II with Laboratory
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
CH 201 Organic Chemistry I
CH 202 Organic Chemistry II
CH 203 Organic Chemistry Laboratory I
CH 204 Organic Chemistry Laboratory II
CH 221 Instrumental Methods of Analysis with Laboratory
CS 102 Introduction to Computers/FORTRAN *or* CS 107 Introduction to Data Processing
M 115 Pre-Calculus Mathematics *or* M 117 Calculus I
M 118 Calculus II
PH 103 General Physics I
PH 104 General Physics II
PH 105 General Physics Laboratory I
PH 106 General Physics Laboratory II
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory
SC 509 Scientific Photographic Documentation
SO 113 Sociology

Electives chosen with adviser

B.S., Law Enforcement Science

This program is designed to provide an interdisciplinary educational program for those people entering law enforcement science fields, especially investigative work. In addition, it is geared toward enhancing the scientific knowledge of those people now holding investigative positions in various enforcement agencies. The curriculum emphasizes law enforcement, forensic science, natural and physical science, mathematics, industrial engineering and the behavioral sciences.

Required Courses

Students earning a B.S. in law enforcement science must complete 122 credit hours, including the university core curriculum and those courses listed below:

CJ 100 Introduction to Criminal Justice I
CJ 101 Introduction to Criminal Justice II
CJ 201 Principles of Criminal Investigation
CJ 204 Forensic Photography with Laboratory
CJ 205 Interpersonal Relations
CJ 215 Introduction to Forensic Science
CJ 217 Criminal Procedures and Evidence I
CJ 218 Criminal Procedures and Evidence II
CJ 227 Fingerprints with Laboratory
CJ 303 Forensic Science Laboratory I
CJ 304 Forensic Science Laboratory II
CJ 311 Criminology
CJ 400 Criminal Justice Problem Seminar
CJ 402 Police in Society
CJ 415 Document and Firearms Examination

CJ 416 Seminar in Forensic Science
CJ 501 Criminal Justice Internship *or* CJ 498 Research Project
M 228 Elementary Statistics *or* P 301 Statistics for Behavioral Sciences
PS 332 Constitutional Law

2 laboratory courses in natural or physical sciences
1 philosophy course
Electives chosen with adviser

B.S., Security Management

The program in security management is designed to provide those entering or now holding administrative or managerial positions in private security the necessary skills and know-how to perform effectively and professionally. The program is interdisciplinary in nature and draws from the areas of criminal justice, forensic science, business administration, industrial engineering and the behavioral sciences.

Required Courses

Students earning a B.S. in security management must complete 121 credit hours, including the university core curriculum and those courses listed below:

CJ 100 Introduction to Criminal Justice I
CJ 102 Criminal Law
CJ 105 Introduction to Security
CJ 201 Principles of Criminal Investigation
CJ 203 Security Administration
CJ 205 Interpersonal Relations
CJ 215 Introduction to Forensic Science
CJ 217 Criminal Procedures and Evidence I
CJ 218 Criminal Procedures and Evidence II
CJ 226 Industrial Security
CJ 306 Security Problems Seminar
CJ 311 Criminology
CJ 410 Legal Issues in Private Security
CJ 416 Seminar in Forensic Science
CJ 501 Criminal Justice Internship
FS 402 Arson Investigation I
IE 223 Personnel Administration
MG 200 Business Systems Analysis
P 212 Business and Industrial Psychology
PS 332 Constitutional Law
SH 100 Safety Organization and Management
SH 400 Occupational Safety and Health Legal Standards

2 courses in natural or physical sciences
1 philosophy course
12 credit hours electives chosen with adviser

A.S., Criminal Justice –Law Enforcement Administration

Student completing the first two years of the bachelor of science degree program in criminal justice–law enforcement administration (62 credit hours) are eligible to receive the associate in science degree. Interested students should contact their adviser.

A.S., Criminal Justice –Correctional Administration

Students completing the first two years of the bachelor of science degree program in criminal justice–correctional administration (62 credit hours) are eligible to receive the associate in science degree. Interested students should contact their adviser.

Minor in Criminal Justice

To minor in criminal justice, students must complete 18 credit hours of criminal justice courses, including those listed below:

CJ 100 Introduction to Criminal Justice I
CJ 101 Introduction to Criminal Justice II

Criminal Justice Certificate Programs

Coordinator: David A. Maxwell, J.D., CP.P.

The department offers certificates in law enforcement science and security management. Students must complete 18 credit hours of required courses to earn a certificate. Students may choose to take these courses for credit or non-credit. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, if you are admitted, the credits earned may be applied toward the requirements for a degree program.

Law Enforcement Science Certificate

This certificate is designed to provide the fundamentals of criminal investigation techniques and procedures, particularly for those involved in or planning to enter investigative positions in law enforcement agencies in both the private and public sectors. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

CJ 201 Principles of Criminal Investigation
CJ 215 Introduction to Forensic Science
CJ 227 Fingerprints with Laboratory
CJ 303 Forensic Science Laboratory I
CJ 304 Forensic Science Laboratory II
CJ 415 Crime Scene Investigation and Pattern Evidence

Security Management Certificate

This certificate is a concentrated program of study in management security systems for private business and industry. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

CJ 105 Introduction to Security
CJ 203 Security Administration

CJ 226 Industrial Security
CJ 410 Legal Issues in Private Security
FS 402 Arson Investigation I
SH 100 Safety Organization and Management

Public Administration

The public administration program is designed to prepare students for public service responsibility as government program administrators, civic leaders and managers or private businesses deeply involved in governmental affairs. Stressed are the organization of government services, the behavior of public officials, the manner in which government raises revenue, the nature of public personnel systems, the role of collective bargaining in the public sector, the manner in which decisions on public expenditures are made and public administrative procedures.

An understanding of public administration is also essential for people preparing for careers in law, journalism and every aspect of business. Public administration training can be easily combined with specialized career programs at the University of New Haven.

Public administration students are strongly encouraged to systematically develop their public speaking, group discussion and writing skills through specialized instruction and as a part of their regular public administration course requirements.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.S., Public Administration

All students earning the B.S. in public administration must take the university core curriculum and the basic courses listed below. The balance of the program is tailored to the student's particular interest such as urban planning and management, health administration and personnel managment.

Students also are encouraged to pursue one of the concentrations listed later in this section.

Required Courses

PA 101 Introduction to Public Administration
PA 302 Public Administration Systems and Procedures
PA 404 Public Policy Analysis
PA 408 Collective Bargaining in the Public Sector
A 101 Introduction to Financial Accounting *or* QA 314 Research Techniques in Business and Government
CS 107 Introduction to Data Processing
EC 314 Public Finance

Health Administration Concentration

The concentration in health administration requires completion of the basic public administration courses listed earlier in his section, plus the courses listed below:

Required Courses

PA 305 Institutional Budgeting and Planning
PA 308 Health Care Delivery Systems
PA 490 Public Health Delivery Systems
PA 491 Public Health and Environmental Law

City Planning and Management Concentration

The concentration in city planning and management requires completion of the basic public administration courses listed earlier in this section, plus four of the courses listed below:

Required Courses

PA 307 Urban and Regional Management
PA 315 Metropolitan Planning
PA 316 Urban Housing *or* PA 412 Seminar in Public Administration
PA 320 Municipal Finance and Budgeting

Minor in Public Administration

To obtain a minor in public administration, students must complete these courses:

Required Courses

PA 101 Public Administration
PA 302 Public Administration Systems and Procedures
PA 408 Collective Bargaining in the Public Sector

Two additional public administration courses

SCHOOL OF ENGINEERING

Konstantine C. Lambrakis, Ph.D., dean

The increasing complexity of technology and the need to match the earth's dwindling resources to the needs of a growing urban society demand more engineers and applied scientists. An engineer capable of meeting the challenges of the future may look forward to a rewarding career.

Because of its broad science and mathematical basis, the typical undergraduate engineering curriculum provides an excellent preparation not only for an engineering career but also for careers or advanced work in other fields such as law, business or medicine.

The School of Engineering at the University of New Haven offers both extensive facilities and well-trained faculty to meet the challenge of this rapidly changing field. Close ties with business and industry are maintained to assess their needs and provide the necessary feedback relative to current professional practices.

Although most of the courses in the curriculum are technological or scientific in nature, particular care is given to the cultural and literary education of the students. Among the required subjects are courses in literature, composition, history and philosophy.

The School of Engineering offers programs leading to the associate in science degree and the bachelor of science degree. At the graduate level the School of Engineering offers programs leading to the master of science degree and the senior professional certificate. Detailed information on these graduate programs is in the Graduate School catalog.

Programs

Bachelor of Science

Chemistry
Chemical Engineering
Civil Engineering
Computer Science
Electrical Engineering
Industrial Engineering
Industrial Technology - Shipbuilding
Materials Technology
Mechanical Engineering

Associate in Science

Chemistry
Civil Engineering
Electrical Engineering

Industrial Engineering
Materials Technology
Mechanical Engineering
Mechanical Technology - Shipbuilding

Master of Science

Computer and Information Science
Electrical Engineering
Environmental Engineering
Industrial Engineering
Mechanical Engineering
Operations Research

Senior Professional Certificate

Computer Applications and Information Systems

Admission Criteria

An applicant for admission to the engineering programs should be a graduate of a secondary school of approved standing and should present 15 acceptable units of secondary school work. These should include four units of English, two units of algebra, one of plane geometry, one half of trigonometry and one unit each of physics and a second science. Deficiencies in English, mathematics and science may be satisfied by summer school attendance, or by an extension of the stated curriculum for one or two semester chosen to fit the student's needs.

Satisfactory placement in the Scholastic Aptitude Test (S.A.T.) in mathematics and English as given by the College Entrance Examination Board, or satisfactory placement in the American College Testing (A.C.T.) program is required.

Choosing a Major

Students in engineering are strongly advised to choose their major by the beginning of the sophomore year. Students who are accepted with academic deficiencies must satisfy those deficiencies before entering the sophomore year.

Those students who are unsure of their major in their sophomore year, or those students who desire to receive formal recognition of the completion of an associate's degree after two years' work, may enroll in the associate in science degree program in engineering.

University Core Curriculum

In addition to school and department requirements, students must fulfill all requirements of the university core curriculum. See page 67 for information.

General Policy of the School of Engineering

The following definitions apply to all degree programs within the School of Engineering.

Free electives

A free elective is any credit course offered by the university for which the student has appropriate preparation. No faculty approval is required. Note: In most programs, School of Business courses are accepted *only* as free electives.

Humanities Electives

These core courses are from areas of humanities or social sciences and are meant to bring the engineering student to a better awareness of social responsibilities and related factors in decision-making processes, and to broaden his or her cultural background.

Mathematics Electives

These are courses from the mathematics department at the 200 or higher level, with the current exclusion of M288 Elementary Statistics, which is offered to students in non-technical degree programs. Faculty advisers should be consulted for recommendations on the most relevant mathematics electives for a student's career objectives.

Technical Electives

Technical electives are upper-level courses directly pertinent to a student's major field of study. These electives must be approved by the student's faculty adviser and may be chosen from engineering school courses. Faculty approval is particularly important to ensure that students meet the math requirements of the Accreditation Board for Engineering and Technology.

Professional Accreditation

The curricula leading to the bachelor's degree in civil, electrical, industrial and mechanical engineering are accredited by the Accreditation Board for Engineering and Technology (A.B.E.T.), formerly called the Engineer's Council for Professional Development (E.C.P.D.).

Common Courses for Engineering Curricula — Freshman Year

Bachelor degree programs for engineering majors contain common requirements for the freshman year of study. The course requirements are listed below:

Engineering Requirements

CH 115	General Chemistry I
CH 117	General Chemistry Laboratory I
CH 116	General Chemistry II
CH 118	General Chemistry Laboratory II
E 105	Composition
E 110	Composition and Literature
ES 107	Introduction to Engineering
CS 102	Introduction to Computers/FORTRAN*
M 117	Calculus I
M 118	Calculus II
PH 150	Mechanics, Heat and Waves with Laboratory

3 credit hours of a humanities/social science elective

*Civil engineering students substitute ME 101.

Humanities and Social Sciences Requirements

In addition to freshman English and introductory economics (EC133), the following 15 credits are required for all engineering students to satisfy the university core:
3 credits (sociology, political science or psychology)
3 credits (English literature or philosophy)
3 credits (art, music, or theater)
3 credits HS 101 (history)
3 credits selected from E202, HU300, HS306 or an SO, P or PS 300-level or above course.

Department of Chemistry and Chemical Engineering

Chairman: George L. Wheeler, Ph.D.

Professors: Peter Desio, Ph.D., University of New Hampshire (Organometallics, Ring-chain Tautomerism in Orthoacylbenzoic acids); George Wheeler, Jacob Finley Buckman Professor of Chemistry & Chemical Engineering, Ph.D., University of Maryland (Biochemistry of Vision, Solid State Spectroscopy)

Associate Professor: Jale Akyurtlu, Ph.D., University of Wisconsin, Madison (Chemical Reaction Engineering)

Assistant Professor: Michael Saliby, Ph.D., SUNY at Binghamton (Inorganic Photochemistry; Synthesis and Spectral Studies in Iridium, Chromium and Rhodium Complexes of Tripodal Amines)

Jacob Finley Buckman Endowed Chair and Scholarships

The Jacob Finley Buckman Endowed Chair of Chemistry and Chemical Engineering was established in 1981 by Mrs. Clarice Buckman of New Haven in memory of her late husband, Jacob Finley Buckman, the co-founder of Enthone Corporation.

The department also awards Jacob Finley Buckman Scholarships and ASARCO Scholarships to students of demonstrated ability majoring in chemistry or chemical engineering.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

Chemistry Club

The department has a chemistry club that is a student affiliate of the American Chemical Society. The club is open to all students, and all chemistry majors are encouraged to join. Club activities include projects, field trips, films, group discussions and social activities.

Chemical Engineering

Chemical engineers apply the fundamental scientific principles of chemistry, physics, mathematics and economics to the solution of practical problems. Typically, chemical engineers are engaged in designing, developing and improving processes which convert material and energy resources into new or better products.

Because chemical engineering is the most broadly based of all engineering disciplines, chemical engineers are capable of solving a wide range of technological problems and are highly employable in a wide variety of areas including: manufacturing, chemical processes

industries, petroleum, aerospace and nuclear materials, automation and instrumentation, plastics, textiles, food and pharmaceutical processing, corrosion control, pollution control and abatement, biomedical engineering and many others. Chemical engineering is also an excellent background for careers in patent law or medical research.

B.S., Chemical Engineering

The chemical engineering program is demanding, challenging and requires hard work from all students. But for those who are genuinely interested and committed, the program develops the required depth of knowledge to embark on a satisfying professional career or to enter graduate school. The curriculum in chemical engineering is consistent with the requirements of the American Institute of Chemical Engineers and includes courses in physics, chemistry and mathematics as well as in chemical, civil, electrical, industrial and mechanical engineering. Courses in the humanities and social sciences are integrated into the curriculum to aid in developing the student's social consciousness and to broaden the educational background. In the freshman year, chemical engineering majors take the same course of study as do all other engineering students. The first chemical engineering courses are taken in the sophomore year, with increased focus during the last two years. In the senior year, students are involved in comprehensive chemical engineering design projects, and may choose four technical elective courses. The electives in the curriculum allow students to design programs that fulfill individual needs and interest.

Required Courses

Sophomore

CH 201 Organic Chemistry I
CH 202 Organic Chemistry II
CH 203 Organic Chemistry Laboratory I
CH 204 Organic Chemistry Laboratory II
CM 201 Fundamentals of Chemical Engineering I
CM 202 Fundamentals of Chemical Engineering II
CS 224 Advanced Programming/FORTRAN
M 203 Calculus III
M 204 Differential Equations
ME 204 Dynamics
ME 301 Thermodynamics I
PH 205 Electromagnetism/Optics with Laboratory
Humanities/social science electives

Junior

CH 221 Instrumental Methods of Analysis with Laboratory
CH 331 Physical Chemistry I with Laboratory
CH 332 Physical Chemistry II with Laboratory
CM 311 Chemical Engineering Thermodynamics
CM 321 Reaction Kinetics/Reactor Design
EC 133 Principles of Economics
ME 321 Fluid Mechanics
ME 404 Heat and Mass Transfer
Humanities/social science electives
3 credit hours of a mathematics or computer elective

Senior

CM 401 Mass Transfer Operations
CM 411 Chemical Engineering Laboratory
CM 421 Plant and Process Design
CM 431 Process Dynamics and Control
EE 211 Principles of Electrical Engineering
IE 204 Engineering Economics

Humanities/social science electives
12 credit hours of technical electives

Chemistry

Chemists are concerned with the structure and analysis of matter and the changes that matter undergoes. Today's chemists are solving chemical problems and developing new substances with the increasing use of laboratory instruments. Many of these instruments are interfaced with computers for rapid data analysis and display.

Careers for chemists in today's market include the rapidly developing fields of instrumentation, computers, energy, environment, forensics, medicine, safety and health, pharmaceuticals, product and equipment development, chemical engineering, plastics and polymers, synthetic fibers, industrial chemistry, technical sales and services and management.

The B.S. in chemistry program consists of all the courses recommended by the American Chemical Society and provides a rigorous background well-suited for those students who will pursue graduate studies in chemistry. The program is also highly recommended for pre-medical students.

The B.A. program in chemistry appears in this catalog under the School of Arts and Sciences.

B.S., Chemistry

Required Courses

Students majoring in chemistry must complete the following courses:

Freshman

CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
E 105 Composition
E 110 Composition and Literature
M 117 Calculus I
M 118 Calculus II
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory

Sophomore

CH 201 Organic Chemistry I
CH 202 Organic Chemistry II
CH 203 Organic Chemistry Laboratory I
CH 204 Organic Chemistry Laboratory II
CH 211 Quantitative Analysis with Laboratory
CH 221 Instrumental Methods of Analysis with Laboratory
CS 102 Introduction to Computers/FORTRAN
M 203 Calculus III
1 technical elective

Junior

CH 331 Physical Chemistry I with Laboratory
CH 332 Physical Chemistry II with Laboratory
CH 351 Qualitative Organic Analysis with Laboratory
CS 224 Advanced FORTRAN Programming

2 technical electives
1 advanced chemistry elective
1 math, computer or biology elective

Senior

CH 411 Chemical Literatuve
CH 412 Seminar
CH 451 Thesis
CH 501 Advanced Organic Chemistry I
CH 521 Advanced Inorganic Chemistry I with Laboratory
CH 599 Independent Study

4 technical electives

B.A., Chemistry

The B.A. in chemistry program appears on page 83 in the School of Arts and Sciences section of this catalog.

A.S., Chemistry

Students who wish to earn an associate degree in chemistry must take a total of 64-66 credit hours including the courses listed below:

Required Courses

Freshman

E 105 Composition
E 110 Composition and Literature
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
M 117 Calculus I
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory

3 credit hours of a social science elective

Sophomore

CH 201 Organic Chemistry I
CH 202 Organic Chemistry II
CH 203 Organic Chemistry Laboratory I
CH 204 Organic Chemistry Laboratory II
CH 211 Quantitative Analysis with Laboratory
CH 221 Instrumental Methods of Analysis with Laboratory
CS 102 Introduction to Computers/FORTRAN
M 118 Calculus II
M 203 Calculus III

6 credit hours of technical electives

Minor in Chemistry

Students minoring in chemistry must complete 23-24 credit hours including the courses listed below:

Required Courses

CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
CH 201 Organic Chemistry I
CH 202 Organic Chemistry II
CH 203 Organic Chemistry Laboratory I
CH 204 Organic Chemistry Laboratory II
CH 211 Quantitative Analysis with Laboratory
CH 221 Instrumental Methods of Analysis with Laboratory

Department of Civil and Environmental Engineering

Chairman: Ross M. Lanius, Jr., M.S.C.E., M.S.C.I.S.

Professors: George R. Carson, M.S.C.E., Columbia University; Ross M. Lanius, Jr., M.S.C.E., University of Connecticut, M.S., University of New Haven; John C. Martin, M.E., Yale University; M. Hamdy Bechir, Sc.D., Massachusetts Institute of Technology

Associate Professor: Janardanan O. Uppot, Ph.D., University of Missouri

Civil engineering deals with planning, designing and constructing facilities serving humanity. These services are diversified and include the reduction of air and water pollution; transportation of people, materials and power; renewal of older sections of cities; development of new communities and development of water supply and power lines, railroads and tunnels; all with the least disturbance to the environment.

A civil engineer must have a solid background in mathematics, basic science, communication skills, engineering science, engineering design and humanities. The curriculum is designed to meet these basic criteria and is accredited by the Accreditation Board for Engineering and Technology (A.B.E.T.).

The first two years are essentially common to all engineering disciplines and include mathematics, basic sciences and communication skills. Students are expected to complete the requirements for the freshman year before entering junior year courses.

The junior year is common to all civil engineering students and provides a basic background in engineering science. In the senior year, concentrated engineering design courses are available in the environmental, structural, surveying and transportation fields. Through the senior project and independent study, an in-depth study of a specialized field is available. Humanities courses are included at all levels.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

Student Chapter of the American Society of Civil Engineers

There is an active student chapter of the American Society of Civil Engineers at the university. The chapter sponsors technical lectures, field trips and social activities.

Chi Epsilon

Two students with high academic records are nominated annually for membership in Chi Epsilon, the national honor society for civil engineers.

B.S., Civil Engineering

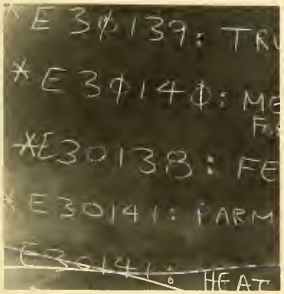
Students must complete a total of 136 credit hours for a degree in civil engineering including the engineering requirements for the freshman year listed earlier in this section and the university core requirements. They are also expected to earn a cumulative quality point ratio of no less than 2.0 in all civil engineering courses and technical electives. The required courses for the final three years of the program are listed below:

Required Courses

Sophomore

CE 201 Statics
CE 202 Strength of Materials
CE 206 Engineering Geology
CS 102 Introduction to Computers/FORTRAN
IE 204 Engineering Economics
M 203 Calculus III
M 204 Differential Equations
ME 204 Dynamics
PH 205 Electromagnetism and Optics with Laboratory

Humanities/social science electives



Junior

CE 203 Elementary Surveying
CE 301 Transportation Engineering
CE 302 Building Construction
CE 304 Soil Mechanics
CE 306 Hydraulics
CE 312 Structural Analysis
CE 315 Environmental Engineering and Sanitation
CE 317 Structural Design Fundamentals
CE 323 Mechanics and Structures Laboratory
CE 325 Project Planning and Schedule
M 311 Linear Algebra *or* M 371 Probability and Statistics I

Humanities/social science electives

Senior

CE 327 Soil Mechanics and Concrete Laboratory
CE 328 Hydraulics and Environmental Laboratory
CE 407 Professionalism and Ethical Practice of Engineering
CE 501 Senior Project
EE 211 Principles of Electrical Engineering I
ME 301 Thermodynamics I

Humanities/social science electives

9 credit hours of civil engineering technical electives *

* 6 credits must be civil engineering design courses

A.S., Civil Engineering

Students who wish to earn an associate degree in civil engineering must complete a total of 60-61 credit hours including the courses listed below:

Freshman

E 105 Composition
E 110 Composition and Literature
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 118 General Chemistry Laboratory II
CS 102 Introduction to Computers/FORTRAN
ES 107 Introduction to Engineering
CH 117 General Chemistry Laboratory I
M 117 Calculus I
ME 101 Engineering Graphics
PH 150 Mechanics, Heat and Waves with Laboratory

Sophomore

CE 201 Statics
CE 202 Strength of Materials
CE 203 Elementary Surveying
CE 301 Transportation Engineering
CE 315 Environmental Engineering and Sanitation
M 118 Calculus II
PH 205 Electromagnetism and Optics with Laboratory

plus any two of the following courses:

CE 302 Building Construction
CE 325 Project Planning and Scheduling
IE 204 Engineering Economics
M 203 Calculus III

Minor in Civil Engineering

Students are required to complete 18 credit hours of civil engineering courses for the minor. With the approval of the chairman, engineering majors may substitute other civil engineering courses for a minor.

Required Courses

Six courses are to be taken from the following list:

CE 201 Statics
CE 202 Strength of Materials
CE 203 Elementary Surveying
CE 301 Transportation Engineering

CE 302 Building Construction
CE 306 Hydraulics
CE 315 Environmental Engineering and Sanitation
CE 316 Code Administration
CE 407 Professionalism and Ethical Practice of Engineering

Department of Electrical and Computer Engineering

Chairman: Gerald J. Kirwin, Ph.D.

Professors: Gerald J. Kirwin , Ph.D., Syracuse University; Daniel C. O'Keefe, Ph.D., Worcester Polytechnic Institute, Kantilal K. Surti, Ph.D., University of Connecticut

Associate Professor: Herbert J. Kump, M.S., Syracuse University

Assistant Professors: Bouzid Aliane, Ph.D., Polytechnic Institute of New York; Ali M. Golbazi, Ph.D., Wayne State University; Bijan Karimi, Ph.D., Oklahoma State University; Mathivanan Packiam, Ph.D., University of Iowa; Sangchul Won, Ph.D., University of Iowa

Laboratory Instructor: Ravi L. Pragasam, M.S., Kansas State University

Electrical engineers are concerned with energy and signals. They apply fundamental principles to the design of systems and devices for the generation, transmission and control of energy. Their activities include the coding of information into electrical signals and the processing of these signals in various computer systems.

The domain of electrical engineering encompasses such familiar and practical devices as power systems, radio and television communications apparatus, computers and automatic control systems.

The techniques and design philosophies of electrical engineering have had extraordinary influence on the development and evolution of the digital computer. All electrical engineering students are required to enroll in several courses from the computer area and additional course work may be undertaken on an elective basis.

An electrical engineer may serve in many professional capacities all of which require a thorough understanding of the scientific principles that govern electrical phenomena. As designers, electrical engineers use existing devices and techniques to meet the challenges of industry for more efficient, precise or reliable operations. These activities often lead to new concepts and techniques and sometimes to the discovery of new phenomena. The technical complexity of the services or products provided by many companies requires personnel with appropriate educational backgrounds. As a result, electrical engineers also find employment opportunities in sales, customer service and maintenance.

An undergraduate program in electrical engineering must prepare the student for a career in a field where new developments occur rapidly. Therefore, it is imperative that a program of studies in engineering be heavily concentrated in the basic principles of the discipline.

At the University of New Haven, electrical engineering students divide their efforts between the tasks of learning engineering analysis methods and the techniques of electrical system design. Examples of modern applications associated with practical analysis and design problems are presented in lecture and laboratory courses. Because the origins of engineering methods are based in the sciences of chemistry, mathematics and physics, these subjects are an important part of the program of studies.

Electrical engineering students have direct access to the department laboratories. The department has recently expanded its lab facilities to include state-of-the-art instruments in various disciplines, including commununication systems, control systems, digital systems and power systems. The microprocessor laboratory is linked to the university's computing network so that fast prototyping and testing of software is possible. The department also has several powerful microcomputers configured as stand alone workstations.

Electrical engineering students should possess good analytical abilities including sound mathematical competence. They should also have a natural curiosity about the multitude of technical devices encountered in everyday life, a willingness to learn the principles that make these devices possible and a desire to create new devices and methods of solving problems.

The Co-op Program

The electrical and computer engineering department participates in the cooperative education programs which permit students to combine periods of professional work experience with their academic studies. More details of this plan may be found in the section of this catalog entitled "The Co-op Program" in the School of Professional Studies and Continuing Education.

Student Societies

The department of electrical and computer engineering sponsors a student section of the Institute of Electrical and Electronics Engineers. This organization supports visiting lecturers and field trips to surrounding industrial sites. Eta Kappa Nu, the national honorary society for electrical engineers, has the Zeta Rho Chapter at the university to honor superior students and to encourage high scholastic achievements.

B.S., Electrical Engineering

Students must complete a total of 130 credit hours for a degree in electrical engineering including the requirements for the freshman year listed earlier in this section. Humanities or social science electives must be selected so as to fulfill the core curriculum requirements of the universtiy.

Technical elective courses in the BSEE program must be selected from upper level offerings (third or fourth year) under the guidance and approval of the student's academic adviser. At least three must be electrical engineering departmental courses.

This component of the curriculum is identified with the career interests of the student and provides the opportunity to concentrate some study in one of the several branches within the discipline. The department offers a variety of advanced courses in electronic design, digital/computer systems, communications engineering, electromagnetic waves and control systems.

Required Courses

Sophomore

EE 201 Basic Circuits I
EE 202 Basic Circuits II
EE 253 Electrical Engineering Laboratory
EE 255 Digital Systems I
EC 133 Principles of Economics I
M 203 Calculus III
M 204 Differential Equations
ME 204 Dynamics
PH 205 Electromagnetism and Optics with Laboratory

Humanities and social science electives.

Junior

EE 301 Network Analysis
EE 302 Systems Analysis
EE 347 Electronics I
EE 348 Electronics II
EE 349 Electrical Engineering Laboratory II
EE 371 Computer Engineering
ME 301 Thermodynamics I

1 mathematics elective
1 electrical engineering technical elective*
Humanities/social science electives

Senior

EE 420 Random Signal Analysis
EE 457 Electrical Engineering Laboratory III
IE 204 Engineering Economics

3 electrical engineering technical electives*
Humanities/social science electives

*To ensure that students meet the requirements of the Accreditation Board for Engineering and Technology (A.B.E.T.), technical electives must be chosen in consultation with the student's adviser.

A.S., Electrical Engineering

Upon successful completion of 63-64 credits of designated courses, including all of the courses in the freshman year, a student may be granted the associate's degree in electrical engineering. All of these courses are also a part of the B.S. in electrical engineering requirements and most students continue their enrollment after receiving their A.S.

Minor in Electrical Engineering

A student may obtain a minor in electrical engineering by completing the following courses:

EE 201 Basic Circuits I
EE 202 Basic Circuits II
EE 253 Electrical Engineering Lab I
EE 255 Digital Systems I
EE 347 Electronics I

The student will also fulfill the prerequisites for these courses.
Students contemplating either a minor or an associate's degree should consult with the department chairman early in their program.

Department of Industrial Engineering and Computer Science

Chairman: Ira H. Kleinfeld, Eng.Sc.D.

Professors: Edward T. George, D.Eng., Yale University; William S. Gere, Ph.D., Carnegie-Mellon University; Roger G. Frey, Ph.D., Yale University; Ira H. Kleinfeld, Eng.Sc.D., Columbia University; Richard A. Mann, Ph.D., University of Wisconsin; Alexis N. Sommers, Ph.D., Purdue University

Associate Professors: Francis J. Costello, M.S.M.E., Newark College of Engineering; Alice Fischer, Ph.D., Harvard University; Norman Hosay, Ph.D., University of Wisconsin; Howard Okrent, Ph.D., Massachusetts Institute of Technology; Gopal Ramanathan, Ph.D., Polytechnic Institute of New York; Ronald Wentworth, Ph.D., Purdue University

Assistant Professor: M. Ali Montazer, Ph.D., SUNY at Buffalo

Instructors: William Adams, B.S., University of New Haven; Priscilla H. Griscom, M.S., University of New Haven; Gary Walters, M.S., University of New Haven

The department of industrial engineering and computer science offers three distinct baccalaureate degree programs: a B.S. in industrial engineering; a B.S. in computer science–industrial applications; and a B.S. in computer science–software systems. The objectives and career opportunities associated with each are described below.

The Co-op Program

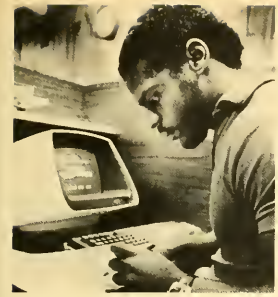
The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

Student Chapter of I.I.E.

Students are eligible to join, at a reduced rate, the student chapter of the Institute of Industrial Engineers. It is affiliated with a local senior chapter, enabling students to develop a sense of the practice of the profession.

B.S., Industrial Engineering

Industrial engineers determine the most effective methods of using the basic factors of production—manpower, machinery and materials. Expertise provided by industrial engineers will be increasingly important as our industries struggle to improve productivity and competitiveness in manufacturing, service and trade. Industrial engineers are needed in manufacturing, in service industries such as hospitals and utilities, in trade and commerce such as banks and insurance companies, and in consulting firms. In addition, industrial



engineers are among the most upwardly mobile of those in the engineering profession, by virtue of their training and experience. Many industrial engineers have attained top management positions in a variety of industries.

The department's program in industrial engineering gives students a broad engineering background during the first two years. In the last two years the required courses in industrial engineering are taken in addition to electives which enable the student to tailor his or her studies to his own interests such as operations reserach, systems analysis, or computer science. This program is the only one of its kind offered in Connecticut and it is accredited by the Accreditation Board for Engineering and Technology (A.B.E.T.).

Students have the opportunity to use the industrial engineering laboratories in human factors, robotics and manufacturing and the university's computer center.

Required Courses

Students earning the B.S. in industrial engineering must complete 129 credit hours including the university core curriculum. These courses must include the freshman requirements listed earlier in this section, 41 credit hours in industrial engineering courses and 6 credit hours of technical electives chosen in consultation with the student's adviser. Technical electives are generally junior- or senior-level courses in industrial engineering or computer science.

Sophomore

CE 201 Statics
CS 102 Introduction to Computers/FORTRAN
CS 224 Advanced Programming/FORTRAN
EC 133 Principles of Economics
IE 204 Engineering Economics
IE 214 Engineering Management
M 203 Calculus III
M 204 Differential Equations *or* M 311 Linear Algebra
ME 311 Linear Algebra
ME 204 Dynamics
PH 205 Electromagnetism and Optics with Laboratory

Humanities/social science electives
1 physics elective

Junior

CE 202 Strength of Materials
EE 211 Principles of Electrial Engineering I
IE 234 Production Control
IE 243 Work Analysis
IE 303 Cost Control
IE 304 Production Control
IE 343 Work Design
IE 346 Probability Analysis
IE 347 Statistical Analysis
IE 348 Manufacturing Processes

Humanities/social science electives

Senior

IE 344 Human Factors Engineering
IE 435 Simulation

IE 436 Quality Control
IE 443 Facilities Planning
IE 402 Operations Research

1 additional electrical engineering course
2 technical electives

B.S., Computer Science/Software Systems

This program follows the Association for Computing Machinery guidelines for an undergraduate computer science degree. It is intended to prepare students either for graduate school in computer science or for a job as a systems or applications programmer. Eventually graduates can expect to hold positions such as software engineer, system designer, free lance software consultant and programming manager.

The computer science/software systems program includes instruction in several programming languages, a strong base in mathematics, and intermediate courses in methods and systems. Advanced courses in various areas may be elected. The student will choose some area of high interest outside of the computer science department and pursue a specialization in that field. These courses must be approved by his or her adviser and are designated as specialization electives.

Required Courses

A total of 125 credit hours including the university core curriculum is required for the bachelor of science in computer science/software systems. Because this is not a typical engineering program, the freshman year curriculum is different from the other engineering disciplines, and is included below.

Freshman

E 105 Composition
E 110 Composition and Literature
M 117 Calculus I
M 118 Calculus II
CS 106 Introduction to Programming/Pascal
CS 226 Advanced Programming and Data Structures/Pascal
PH 150 Mechanics, Heat and Waves with Laboratory
HS 101 Western Civilization to 1700

1 social science elective
1 fine arts or music or theatre elective

Sophomore

E 225 Technical Writing and Presentations
M 118 Calculus II
M 203 Calculus III
M 270 Discrete Structures
CS 237 Data Structures and Algorithms
CS 228 Intensive FORTRAN
CS 229 Intensive COBOL
CS 334 Machine Organization and Assembly Language
PH 250 Electromagnetism and Optics with Laboratory

2 specialization electives
1 social science elective

Junior

HU 300 The Nature of Science
IE 346 Probability Analysis
IE 347 Statistical Analysis
CS 320 Operating Systems
CS 337 Data Base Systems
CS 338 Structure of Programming Languages
CS 339 Theory and Construction of Compilers
EE 255 Digital Systems I
EE 356 Digital Systems II

1 specialization elective
1 literature or philosophy core elective

Senior

CS 337 Data Base Systems
CS 420 Software Design and Development
M 311 Linear Algebra

1 fine arts elective
4 computer science electives
1 specialization elective
2 technical electives

B.S., Computer Science/Industrial Applications

The program in CS/IA is designed for the student who wants to work with computers as a profession, initially as an applications programmer in business or industry, ultimately as a manager, systems analyst or director of a computing center. Programming in several languages, a strong base in mathematics and general business techniques and practices are emphasized.

Required Courses

A total of 124 credit hours including the university core curriculum is required for the CS/IA. The freshman year curriculum is compatible with that for the CS/SS degree above.

Freshman

CS 106 Introduction to Programming/Pascal
CS 226 Advanced Programming and Data Structures/Pascal
E 105 Composition
E 110 Composition and Literature
EC 133 Principles of Economics I
HS 101 Western Civilization to 1700
M 117 Calculus I
M 118 Calculus II
PH 150 Mechanics, Heat and Waves with Laboratory

1 fine arts or music or theatre elective

Sophomore

CS 237 Data Structures and Algorithms
CS 228 Intensive FORTRAN
CS 229 Intensive COBOL/BASIC
CS 334 Machine Organization and Assembly Languages
IE 204 Engineering Economics
IE 214 Engineering Management
E 225 Technical Writing and Presentations

EC 134 Principles of Economics II
ME 101 Engineering Graphics
PH 205 Electromagnetism and Optics with Laboratory

1 social science elective

Junior

CS 320 Operating Systems
IE 303 Cost Control
IE 304 Production Control
IE 346 Probability Analysis
IE 347 Statistical Analysis
EE 255 Digital Systems I

1 industrial engineering elective
1 computer science elective
1 literature or philosophy elective

Senior

IE 408 Systems Analysis
CS 337 Data Base Systems
CS 420 Software Design and Development

3 computer science electives
3 technical electives
1 free elective

A.S., Computer Science

This two-year associate's program is designed for the student who wishes an earlier entrance into the job market. All credits can be applied toward the CS/IA degree at a later date.

A.S., Industrial Engineering

This two-year associate degree program is designed for the student who wishes an earlier entrance to the job market. All credits can be applied toward the B.S. in industrial engineering at a later date.

Minor in Industrial Engineering

Engineering students may minor in industrial engineering by completing 18 credit hours of industrial engineering courses. The required courses for the minor are listed below.

Required Courses

IE 204 Engineering Economics
IE 233 Cost Control
IE 234 Production Control
IE 243 Work Analysis
IE 443 Facilities Planning
IE 402 Operations Research

Minor in Computer Science

Required Courses

CS 106 Introduction to Programming/PASCAL
CS 226 Advanced Programming/PASCAL
CS 228 Intensive FORTRAN
CS 229 Intensive COBOL/BASIC
CS 237 Data Structures and Algorithms
CS 334 Machine Organization and Assembly Language

Department of Mechanical Engineering

Chairman: John Sarris, Ph.D.

Professors: Konstantine C. Lambrakis, Ph.D., Rensselaer Polytechnic Institute; Stephen M. Ross, Ph.D., The Johns Hopkins University; B. Badri Saleeby, Ph.D., Northwestern University; John Sarris, Ph.D., Tufts University; Richard M. Stanley, Ph.D., Yale University

Associate Professor: Oleg Faigel, Ph.D., Moscow Polytechnic Institute

Assistant Professor: Carl Barratt, Ph.D., Cambridge University

The department of mechanical engineering has a long history of success in producing outstanding graduates in the field of thermal sciences, fluids and design. To ensure that graduates will continue to distinguish themselves in either graduate school or the practice of engineering, the department places emphasis on the scientific foundation of the curriculum and on the breadth and scope of the professional courses. Implicit in this emphasis is a demand for a high level of maturity and flexibility on the part of the student.

The rapid advances in science and technology require that mechanical engineers, as generalists among engineers, not only have a thorough understanding of basic scientific principles, but also have an appreciation of human values and an awareness of the effects of their contribution to the social, professional, economic and ecological climate in which they work.

Several options for concentration at the senior year are available for a student to pursue. At that level, restricted elective courses may be selected, with the help of the student's faculty adviser, which offer the opportunity for further learning in areas such as fluids, energy, design, heat transfer, numerical analysis and computers, aerospace sciences and control systems.

Exceptional students having an overall average of 3.50 or better may join the Delta Zeta Chapter of Pi Tau Sigma honorary fraternity which provides the opportunity for closer relations with the faculty and other prominent individuals in the field for the purpose of further professional development, involvement in faculty research and varied social and intellectual activities.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables a student to combine practical, paid work experience in the student's career field with college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

Student Chapter of A.S.M.E.

Membership in the American Society of Mechanical Engineers student section is open to all mechanical engineering students of good standing and provides the opportunity for field trips to local industrial establishments, social activities and reading of interesting professional literature.

B.S., Mechanical Engineering

Required Courses

Students earning the bachelor of science in mechanical engineering are required to complete 133 credit hours including the university core curriculum. Requirements include the freshman year courses listed earlier in this section and those listed below:

Sophomore

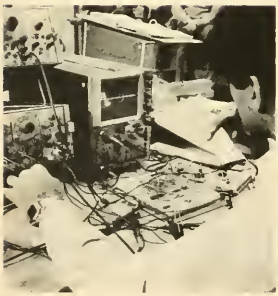
CE 201 Statics
CE 202 Strength of Materials I
M 203 Calculus III
M 204 Differential Equations
ME 101 Engineering Graphics
ME 204 Dynamics
ME 215 Instrumentation Laboratory
MT 200 Engineering Materials
PH 205 Electromagnetism and Optics with Laboratory

Humanities/social science elective
3 credit hours of a science elective (200 or higher level course in physics, chemistry or biology)

Junior

EE 201 Circuit Analysis I
EE 202 Circuit Analysis II
ME 301 Thermodynamics I
ME 302 Thermodynamics II
ME 307 Strength of Materials II
ME 311 Machine Elements
ME 312 Mechanical Design
ME 315 Mechanics Laboratory
ME 344 Mechanics of Vibration

3 credit hours of a mathematics elective (300 or higher level).
Humanities/social science electives



Senior

EC 133 Principles of Economics I
IE 204 Engineering Economics
ME 421 Fluid Mechanics
ME 422 Gas Dynamics
ME 404 Heat and Mass Transfer
ME 415 Thermo/Fluids Laboratory
ME 425 Senior Design Project

6 credit hours of technical electives*

* To ensure that students meet the math requirements of the Accreditation Board for Engineering and Technology (A.B.E.T.), technical electives must be chosen in consultation with the student's adviser.

B.S., Materials Technology

Director: M.N. Parthasarathi, Ph.D.

The performance of virtually every electrical, mechanical and structural device is limited ultimately by the materials from which it is made. The materials engineer is the expert on materials selection who

must weigh the relative merits of metals against plastics and specify material for everything from ceramic magnets to aerospace composite fiber materials. The materials engineer is also the controller of materials processing during manufacture. This might include such diverse specialties as powder metallurgy, plastic extrusion, metal heat treatment and vapor deposition, to name but a few fabrication techniques.

The bachelor of science degree program in materials technology provides a broad core curriculum to develop an understanding of the fundamental principles common to all materials. It also incorporates elective courses to enable the student to specialize in a particular materials technology field.

Required Courses

Students earning the bachelor of science in materials technology are required to complete 124 credit hours, including the university core curriculum and those courses listed below:

CE 201 Statics
CE 202 Strength of Materials I
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
EC 133 Principles of Economics I
EE 211 Principles of Electrical Engineering
ES 107 Introduction to Engineering
HS 101 Foundations of the Western World
M 115 Pre-Calculus Mathematics
M 117 Calculus I
M 118 Calculus II
ME 204 Dynamics
ME 301 Thermodynamics I
MT 219 Physical Metallurgy
MT 304 Mechanical Behavior of Materials
MT 310 Materials Laboratory
MT 342 Steels and their Heat Treatment
MT 500 Research Project
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with laboratory

Choice of CS 102 Introduction to Computers/FORTRAN
or ME 101 Engineering Graphics.

12 credit hours of materials electives
21 credit hours of technical electives
3 credit hours of free electives

A.S., Mechanical Engineering

The associate degree in mechanical engineering is not designed to be a terminal degree. It simply provides formal evidence that the student has completed about one-half of the bachelor's program. Students wishing to earn an associate degree in mechanical engineering must complete 60-61 credit hours, corresponding to the courses listed below:

Freshman

E 105 Composition
E 110 Composition and Literature

ES 107 Introduction to Engineering
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
CS 102 Introduction to Computers/FORTRAN
M 117 Calculus I
ME 101 Engineering Graphics
PH 150 Mechanics, Heat and Waves with Laboratory

Sophomore

CE 201 Statics
CE 202 Strength of Materials I
M 118 Calculus II
ME 204 Dynamics
ME 301 Thermodynamics I
MT 200 Engineering Materials
PH 205 Electromagnetism and Optics with Laboratory

Plus any two of the following courses:

IE 204 Engineering Economics
M 203 Calculus III
ME 302 Thermodynamics II
ME 307 Strength of Materials II
ME 311 Machine Elements

A.S., Materials Technology

The associate degree in materials technology in not designed to be a terminal degree. It simply provides formal evidence that the student has completed about one-half of the bachelor's program. Students wishing to earn an associate degree in materials technology must complete 64 credit hours, corresponding to the following courses:

E 105 Composition
E 110 Composition and Literature
ES 107 Introduction to Engineering
CE 201 Statics
CE 202 Strength of Materials I
CH 115 General Chemistry I
CH 116 General Chemistry II
CH 117 General Chemistry Laboratory I
CH 118 General Chemistry Laboratory II
CS 102 Introduction to Computers/FORTRAN *or*
M 115 Pre-Calculus Mathematics
M 117 Calculus I
M 118 Calculus II
ME 101 Engineering Graphics
ME 204 Dynamics
ME 301 Thermodynamics I
MT 219 Physical Metallurgy
MT 310 Materials Laboratory
PH 150 Mechanics, Heat and Waves with Laboratory
PH 205 Electromagnetism and Optics with Laboratory

Plus any two of the following courses:

EE 211 Principles of Electrical Engineering
MT 304 Mechanical Behavior of Materials
MT 331 Nonferrous Metallurgy
MT 342 Steels and their Heat Treatment

Minor in Mechanical Engineering

Students wishing to minor in mechanical engineering must complete the following courses with a minimum QPR of 2.0.

ME 101 Engineering Graphics
ME 204 Dynamics
ME 301 Thermodynamics I

Plus three courses among the 300- or 400-level M.E. courses. (Students with general interest in mechanical engineering are advised to select ME311, ME344 and ME421.)

Shipbuilding Technologies
(UNH in Southeastern Connecticut)

Director: B. Badri Saleeby, Ph.D.

Program Coordinator: Oliver H. Porter, Assistant Professor

Two programs of countinuing education in shipbuilding, designed specifically for shipyard workers are available on a part-time basis at the UNH/SE Connecticut facility. These programs are:

A.S. Mechanical Technology: Shipbuilding
B.S. Industrial Technology: Shipbuilding

The shipbuilding industry is of strategic national importance and has lately been undergoing dramatic changes under the pressures of international competition and newly emerging production technologies and management approaches. The degree programs listed above are intended to increase effectiveness and level of awareness on the job and to facilitate career advancement.

The programs are derived from more traditional studies in mechanical and industrial engineering and include topics in naval architecture, marine engineering and shipyard management.

Students admitted into the program are, for the most part, shipyard workers who either have acquired or are in the midst of acquiring skills of a particular trade such as welding, pipefitting, sheet-metal forming, rigging, tool-making or drafting. For these, the program provides an opportunity for job related academic advancement.

A.S., Mechanical Technology: Shipbuilding

Students earning the A.S. degree must complete 60-67 credit hours including the courses listed below:

SB 101 Introduction to Shipbuilding
SB 102 Basic Ship Stability
SB 201 Elements of Ship Propulsion

1 additional shipbuilding course
9 credits in general engineering courses
12 credits in technical/management electives
4-11 credits in mathematics (depending on math placement)
14 credits in science
9 credits in English and social science

A.S. degree students can choose their electives so as to develop a program emphasis which leads to engineering studies (transferring at the A.S. level into mechanical, industrial or other branch of engineering study), to business studies, or to continuing shipbuilding studies.

B.S., Industrial Technology: Shipbuilding

The B.S. degree program emphasizes the large scale production management of ships and submarines. Though some A.S. shipbuilding graduates may transfer into engineering or business programs, many will find the B.S. shipbuilding program to be the most appropriate continuation of their studies. The B.S. level program builds upon the A.S. program, advancing the same career continuing education purposes (increased job responsibility, skills development and upgrade, academic status, career mobility.)

The program consists of 67 credit hours of study in addition to the A.S. program requirements. These additional credits include course-work in industrial management, continued math and engineering science studies, university core humanities requirements, and 15 restricted elective credits chosen from scientific, management, or engineering subjects related to shipbuilding.

Transfer Credit

Students may receive credit for up to 30 credit hours of appropriate and satisfactory course work completed at any accredited college or university.

Further Information

Detailed program requirements and schedules, as well as individual advisement are available at the UNH/SE Connecticut offices—University of New Haven; 224 Eastern Point Road; Groton, Connecticut 06340. Telephone: 449-8500, 446-2082, 932-7387, 932-7172.

Cruises and

SCHOOL OF HOTEL, RESTAURANT AND TOURISM ADMINISTRATION

Ronald A. Usiewicz, Ph.D., dean

James F. Downey, Ph.D., associate dean

Hotel, food service, dietetic and travel professionals have careers that are challenging and rewarding. Job opportunities range from managing small restaurants to directing large hotel and resort complexes, with employment possibilities in the U.S. and abroad, from small towns to major cities and from seashore to ski country.

An explosive rate of expansion is predicted, both nationally and internationally, for hospitality enterprises during the coming decade. Virtually all nations are looking for American talents and know-how in hotel/motel, food service and tourism operations. These conditions generate a great demand for hospitality management graduates with motivation, experience and education, who can move with the tide and start climbing the career ladders in the hospitality industry.

The School of Hotel, Restaurant and Tourism Administration serves the feeding, lodging, tourism, health care and recreational industries. Our graduates furnish the managerial talent needed by hotels, motor inns, resorts, health care institutions, private clubs, restaurants and travel facilities. Professional management is absolutely necessary to meet the increasing governmental, financial and operational complexities of the industry.

Programs

Bachelor of Science
Hotel and Restaurant Management
Tourism and Travel Administration
General Dietetics
Institutional Food Service Administration

Associate Degree
Hotel and Restaurant Management
Executive Housekeeping Administration
Tourism and Travel Administration
Dietetic Technology

Certificate Programs
Hotel and Restaurant Management
Executive Housekeeping Administration
Tourism and Travel Administration

Institutional Food Service Administration
Restaurant Management
Hotel Management
Club Management
Casino Management
Food Service Education
Culinary Arts
Dietary Management
Bar Management

Master of Business Administration
Hotel and Restaurant Management Concentration
Dietetics Administration Concentration
Tourism and Travel Concentration

Senior Professional Certificates
Hotel and Restaurant Management
Dietetics Administration
Tourism and Travel Administration

Supervised Field Experience

Because of the unique nature of the hospitality industry and the diverse exposure to hands-on experience that is highly recommended by industry leaders, the student will be required to complete a total of 750 hours of field experience for the associate degree, and 1,250 hours for the bachelor's degree. See the course descriptions for HR 215, HR 217, HR 219, HR 221 and HR 510 for specific requirements and assignments.

The Co-op Program

The school participates in the cooperative education program, a unique educational strategy that results in a planned, integrated program of work and study.

Co-op affords the student the opportunity of seeing the practical application of classroom theory to the world of work, of sampling career possibilities, and of gaining valuable work experience before graduation. Currently, the school participates in cooperative education programs with major local and national hospitality organizations including Walt Disney World, Marriott, Hyatt, Sheraton and PEOPLExpress Airlines, among many others. For further details, the student may consult the cooperative education director or the faculty Co-op adviser in the school.

University Food Service

The School of Hotel, Restaurant and Tourism Administration operates and manages the university's on-campus food service facility located in the Student Center. This arrangement is unique, since no other four-year hotel and restaurant management program throughout the nation maintains a similar responsibility.

Faculty, students and full-time food service employees share the work effort required to manage and control the university's food service operation. This cooperative relationship allows for a credible and viable "real world" experience for the student.

Hotel/Restaurant Club

The purpose and functions of the Hotel/Restaurant Club are: to promote and develop professionalism in the hospitality industry; to provide special services to clientele in order to support club operations and professional functions; to attend national conferences, expositions, hotel/restaurant shows and seminars, and to provide a means of fellowship and camaraderie among students enrolled in hospitality programs. Students are urged to become members of the club and participate in the numerous social, academic and catering functions throughout the year.

Tourism Committee

Established as a means of actively promoting tourism, the Tourism Committee provides a forum for interested tourism and travel administration majors. Members attend tourism conventions, plan social functions, host educational seminars and explore career possibilities by meeting with prominent travel professionals from various areas within the industry. All tourism and travel administration majors are encouraged to join and actively support and participate in the activities of the Tourism Committee.

Hotel Sales Management Association Club

This student club represents an educational organization of more than 6,500 sales-minded hotel/motel executives who manage properties of all types and sizes in more than 90 countries around the world.

Founded in 1927, one of HSMA's primary objectives is—through educational programs, conventions, career development workshops and printed literature—to exchange and interchange the latest information, ideas and sales techniques as they relate to hospitality industry marketing. Overall, HSMA's basic purpose is to advance the knowledge and upgrade the professionalism of those engaged in the selling and servicing of rooms, food and beverages.

HSMA offers its student/faculty members many unique opportunities to learn about the vital aspects of sales and marketing in today's hospitality industry. This knowledge will be of high practical use not only for those seeking a career in hotel/motel sales, but equally for anyone who aspires to any type of administrative or executive position in the lodging, feeding or travel fields.

Dietetics and Institutional Management Society

The Dietetics and Institutional Management Society was formed for the purpose of promoting and developing professionalism in the field of nutrition. Nutritional activities on a national and statewide basis are discussed, and information on meetings and seminars in the field of foodservice is shared with students.

Activities are planned to foster nutrition at school and in the community and, when feasible, group trips with society members are taken within the state and to nearby states.

Women in Hospitality Club

Recognizing the ascending role of women in the hospitality industry, a group known as "Women in Hospitality" was formed within the School of Hotel, Restaurant and Tourism Administration.

The purposes of the organization are to establish a means of exchange for business, educational and career information, to provide a student job bank, to organize alumni and to seek scholarships to aid students. Members are expected to help in new student recruitment.

Club Managers' Association of America, Student Chapter

The purpose of the student chapter of the Club Managers' Association is to make students more aware of club management and its overall function in the hospitality industry. The chapter visits various clubs in the Connecticut area and takes part in many of their meetings and workshops.

Professional Associations

The School of Hotel, Restaurant and Tourism Administration sustains membership in the following hospitality professional associations:

Council on Hotel, Restaurant and Institutional Education
National Restaurant Association
American Hotel/Motel Association
Club Managers Association of America
American Dietetic Association
Hotel Sales Management Association
International Association of Hospitality Accountants
Association of Hospitality Financial Management Educators
Hospital, Institution and Educational Food Service Society
National Association of College and University Food Service
Food Service Executives Association
Society for the Advancement of Food Service Research
American Society of Travel Agents
Pacific Area Travel Association
Society of Travel and Tourism Educators
Women Executives in Travel
Connecticut Restaurant Association
Connecticut Hotel/Motel Association
Connecticut Club Managers' Association

Placement

A student in the University of New Haven's School of Hotel, Restaurant and Tourism Administration receives help in finding interesting, satisfying work in his or her chosen field in many ways throughout his or her college years. The school and its faculty are known to hospitality executives throughout the nation. The student, through attendance and participation in seminars, lectures and industry conventions, has ample opportunity to meet interesting and important people in the field. The school also maintains, in cooperation with Career Development, an active placement service to help students obtain hospitality-related jobs during the academic year as well as to assist them in finding permanent positions.

Many firms send representatives to our campus in an effort to seek qualified candidates for possible employment. Corporations such as Hyatt, Marriott, Sheraton, Walt Disney World, Holiday Inns and other similar firms have visited our school and will continue to do so in the future. While the university does not guarantee employment, the programs provided by the school, the quality of its faculty and the admirable performance of our past graduates in the industry have combined with the efforts of the university's placement office to produce a past record of an enviable 95 to 100 percent graduate placement.

Admission Criteria

An applicant for admission to a program in this school must be a graduate of an approved secondary school or the equivalent. While no set program of high school subjects is prescribed, an applicant must

meet the standard of the university with respect to the high school average. Applicants must present 15 acceptable units of satisfactory work, including nine or more units of college preparatory subjects. Satisfactory scores on College Entrance Examination Board Scholastic Aptitude Tests (S.A.T.) or American College Testing (A.C.T.) program tests are required.

The Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the university core curriculum. See page 67 for information.

Transfer Credit

The School of Hotel, Restaurant and Tourism Administration is interested in the further educational and professional development of students with transcripts from junior, senior and community colleges, plus professional schools such as the Culinary Institute of America. A transfer credit policy for students transferring from a properly accredited school has been developed and will be furnished upon request. Special provisions have also been developed for applicants holding the baccalaureate degree in some other discipline.

Department of Hotel and Restaurant Management

Chairman: Linsley T. DeVeau, M.S.

Professors: Angelo Bentivegna, D.Ed., Pennsylvania State University; Ronald A. Usiewicz, Ph.D., Kent State University

Associate Professor: James F. Downey, Ph.D., Purdue University

Assistant Professor: Linsley T. DeVeau, M.S., University of New Haven

Instructors: Liliane Rocher, M.A., Caen University; Judith Smith, M.B.A., University of New Haven; Cynthia Whalen, M.B.A., University of New Haven; William H. Williams, M.S.I.R., University of New Haven

The food service industry has expanded rapidly in the past half century, especially in the last two decades, and ranks first in volume of sales among all retail outlets in the United States; a conservative estimate is that one out of every three meals is planned, prepared and served outside the family home. The food service industry is broad in scope and varies from systems such as highly competitive and expensive restaurants and hotels to a multiplicity of fast and less costly food outlets such as schools, universities and hospitals with conservative budgets.

Hotel management offers outstanding personal and financial rewards. The diversified knowledge required in the management and

operation of the modern hotel or motel demands a broad and varied professional background. The program in hotel management is designed to assist the student in his or her preparation for a rewarding career in this demanding profession.

B.S., Hotel and Restaurant Management

A student earning a bachelor of science degree in hotel and restaurant management is able to focus on the development of those managerial skills, abilities, and competencies essential to all professional managers, with specific concentration on those characteristics needed for managing hotels, restaurants and related operations.

Required Courses

Students earning a B.S. in hotel and restaurant management must complete 133 credit hours, including the university core curriculum, business electives and those courses listed below:

HR 100 Introduction to the Hospitality Industry
HR 200 Volume Food Production and Service I
HR 202 Volume Food Purchasing
HR 204 Volume Food Production and Service II
HR 210 Hotel Front Office Systems
HR 212 Laws of Innkeeping
HR 215 Supervised Field Experience I
HR 217 Supervised Field Experience II
HR 219 Supervised Field Experience III
HR 221 Supervised Field Experience IV
HR 321 Hotel, Restaurant and Institutional Food Service Accounting and Auditing Procedures
HR 322 Marketing and Sales Promotion for the Hospitality Industry
HR 325 Food and Labor Cost Controls
HR 326 Personnel Management in the Hospitality Industry
HR 330 Institutional Environmental Services and Housekeeping
HR 410 Systems and Operations
HR 411 Food Service Equipment and Layout Design
HR 510 Supervised Field Experience V
HR 512 Seminar in Hospitality
TT 165 Principles of Tourism and Travel
TT 166 Touristic Geography
DI 214 Food Service Management Systems I
DI 216 Food Service Management Systems II
DI 218 Food Service Management Systems III

Plus hotel and restaurant management required electives *and* one dietetic and institutional management required elective

A.S., Hotel and Restaurant Management

A student may obtain an associate degree in hotel and restaurant management, then continue at the University of New Haven and receive the B.S. in hotel and restaurant management.

Required Courses

Students earning the A.S. in hotel and restaurant management must complete 66 credit hours including the courses listed below:

HR 100 Introduction to the Hospitality Industry
HR 200 Volume Food Production and Service I

HR 202 Volume Food Purchasing
HR 204 Volume Food Production and Service II
HR 210 Hotel Front Office Systems
HR 212 Laws of Innkeeping
HR 215 Supervised Field Experience I
HR 217 Supervised Field Experience II
HR 219 Supervised Field Experience III
HR 304 Cultural Understanding of Foods and Cuisines
HR 321 Hotel, Restaurant and Institutional Food Service Accounting and Auditing Procedures
HR 322 Marketing and Sales Promotion for the Hospitality Industry
HR 325 Food and Labor Costs Controls
HR 326 Personnel Management in the Hospitality Industry
TT 165 Principles of Tourism and Travel
E 105 Composition
M 127 Finite Mathematics

Plus four hotel and restaurant management required electives *and* one dietetics and institutional management required elective

A.S., Executive Housekeeping Administration

Students completing the associate degree will be eligible for membership in the National Executive Housekeepers Association.

Required Courses

The executive housekeeping administration major must complete the following 66 credit hours for the associate in science degree:

HR 100 Introduction to the Hospitality Industry
HR 210 Hotel Front Office Systems
HR 212 Laws of Innkeeping
HR 215 Supervised Field Experience I
HR 217 Supervised Field Experience II
HR 219 Supervised Field Experience III
HR 321 Hotel, Restaurant and Institutional Food Service Accounting and Auditing Procedures
HR 322 Marketing and Sales Promotion for the Hospitality Industry
HR 325 Food and Labor Cost Controls
HR 326 Personnel Management in the Hospitality Industry
HR 330 Institutional Environmental Services and Housekeeping
HR 410 Systems and Operations
TT 165 Principles of Tourism and Travel
DI 218 Food Service Management Systems III
E 105 English Composition
M 127 Finite Mathematics

Plus six hotel and restaurant management required electives

Minor Programs

A total of 18 semester hours of course work must be earned in order for a student to declare the fields of hotel and restaurant management or executive housekeeping administration as a minor area of study. The course work, 18 credits, is identical to the requirements of the various certificate programs.

Hotel and Restaurant Certificate Programs

The department offers certificates in hotel and restaurant management, hotel management, restaurant management, club management, culinary arts, executive housekeeping administration, casino management, bar management and food service education. Students must complete 18 credit hours of required courses to earn a certificate. Students may choose to take these courses on a credit or non-credit basis. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, if you are admitted, the credits earned may be applied toward the requirements for a degree program.

Hotel and Restaurant Management Certificate

This program is designed for those professionals currently employed in hotels, motels, resorts, clubs and areas of food service, excluding institutional, who wish to increase their knowledge and skills leading to a supervisory position in this growing field. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 304 Cultural Understanding of Foods
HR 321 Hotel, Restaurant and Institutional Accounting and Auditing Procedures
HR 325 Food and Labor Cost Controls
HR 326 Personnel Management for Hospitality
HR 410 Systems and Operations
HR 411 Equipment and Layout Design

Hotel Management Certificate

This program is designed for those individuals currently employed in the rooms division of a hotel. Upon completion of the certificate, the student will have the knowledge needed to move into a management position. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 210 Front Office Systems
HR 212 Laws of Innkeeping
HR 321 Hotel, Restaurant and Institutional Accounting and Auditing Procedures
HR 322 Marketing and Sales Promotion
HR 326 Personnel Management in the Hospitality Industry

Plus one hotel and restaurant management required elective

Restaurant Management Certificate

For individuals who wish to increase their current skills in restaurant management and advance to a higher level of management. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 304 Cultural Foods and Cuisines
HR 325 Food and Labor Cost Controls
HR 326 Personnel Management for Hospitality
HR 410 Systems and Operations
HR 411 Equipment and Layout Design

Plus one hotel and restaurant management required elective

Club Management Certificate

The club management certificate is designed for individuals currently employed in a private club who wish to advance to a management position. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 300 Introduction to Club Management
HR 300 Club Operations and Management
HR 300 Club Property Management
HR 300 Club Banquet Management
HR 300 Private Club Administration
HR 300 Committee Policies and Procedures in Club Management

Culinary Arts Certificate

This certificate is designed to expose the student to all levels of culinary techniques. Upon completion of the program, the student will be prepared to pursue a culinary position in any type of food service operation. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 200 Volume Food Production and Service I
HR 202 Volume Food Purchasing
HR 204 Volume Food Production and Service II
HR 304 Cultural Foods and Cuisines

Plus two hotel and restaurant management required electives

Executive Housekeeping Administration Certificate

For individuals who wish to increase their current skills in housekeeping administration and/or assume middle supervisory positions. Career options include positions with housekeeping departments of hotels, motels, resorts, clubs and lodging facilities. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 210 Hotel Front Office Systems
HR 321 Hotel, Restaurant and Institutional Accounting and Auditing Procedures
HR 212 Laws of Innkeeping
HR 326 Personnel Management in the Hospitality Industry
HR 330 Institutional Environmental Services and Housekeeping

Plus one hotel and restaurant management required elective

Food Service Education Certificate

This certificate is designed for those individuals who are currently teaching in a food service education program at the high school or vocational school level. The program will provide the student with an advanced understanding of food service operations. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 100 Introduction to the Hospitality Industry
HR 202 Volume Food Purchasing
HR 204 Volume Food Production and Service II
HR 304 Cultural Foods and Cuisines
HR 325 Food and Labor Cost Controls
HR 411 Food Service Equipment and Layout Design

Bar Management Certificate

The bar management certicate is designed for those individuals who are working in the beverage area of the hospitality industry. Upon completion of the program, the student will be prepared to advance to a bar management position within a hotel, restaurant or club. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 322 Marketing and Sales Promotion
HR 325 Food and Labor Cost Control
HR 410 Systems and Operations
HR 411 Equipment and Layout Design

Plus two hotel and restaurant management required electives

Casino Management Certificate

This program is designed to give the currently employed hotel and restaurant worker the knowledge necessary to transfer into the rapidly expanding gaming industry. All students are required to take 18 credit hours, including the courses listed below:

Required Courses

HR 212 Laws of Innkeeping
HR 322 Marketing and Sales Promotion
HR 326 Personnel Management for Hospitality

Plus three hotel and restaurant management required electives

Department of Tourism and Travel Administration

Chairman: Assistant Professor Elisabeth Van Dyke, Ph.D., Columbia University

Tourism and travel activities are major national resources for many nations. Travel patterns often affect the construction of facilities, and most countries and states have major programs to expand tourism within their boundaries. Tourism contributes to so many different

economic areas that expenditures related to world tourism and travel are expected to approach $600 billion before the end of the century. These figures emphasize the need for expert professional counselors and consultants in tourism and travel.

Tourism and travel professionals impact on commercial activities ranging from transportation, accommodations and food, to touring, sightseeing, shopping and cultural events. The tourism and travel major studies the history, routes, equipment, services and developments in the areas of tourism and travel, as well as the cultural, economic, and political implications of tourism-related activities.

The department of tourism and travel is an allied member of the American Society of Travel Agents (ASTA), and actively participates in the society's events. Students earning the bachelor's degree in tourism and travel administration can compete in the ASTA scholarship funds as well as the internship program for the Annual International Congress.

Through membership in the Society of Tourism Educators, the Pacific Area Travel Association and the Women Executive's International Tourism Association and, attendance at seminars students gain practical knowledge. The department also maintains a close relationship with the Institute of Certified Travel Agents thus allowing students to attend the study group activities of the institute.

B.S., Tourism and Travel Administration

A student earning a bachelor of science degree in tourism and travel administration studies international business, economics, international relations and the social and cultural patterns that have shaped the development of the tourism and travel industry. Students receive field experience opportunities at travel agencies, airlines and convention bureaus throughout New England.

Students enrolled in the tourism and travel administration major are encouraged to choose a minor in political science, psychology, sociology or international business.

Required Courses

Students earning a B.S. in tourism and travel administration must complete 133 credit hours, including the university core curriculum, business electives and those courses listed below:

TT 165	Principles of Tourism and Travel
TT 166	Touristic Geography
TT 215	Supervised Field Experience I
TT 217	Supervised Field Experience II
TT 219	Supervised Field Experience III
TT 221	Supervised Field Experience IV
TT 267	Shipping and Cruises
TT 268	Land Transportation
TT 370	Airline Transportation and Reservations Procedures
TT 375	Travel Agency Management
TT 480	Wholesalers and Tour Operators
TT 512	Seminar in Tourism and Travel
HR 100	Introduction to the Hospitality Industry
HR 210	Hotel Front Office Systems
HR 321	Hotel, Restaurant and Institutional Food Service Accounting and Auditing Procedures

PS 241 International Relations
PS 242 International Law and Organization
AE 310 Air Transportation Management
AE 400 Airport Management

Plus seven tourism and travel administration required electives

A.S., Tourism and Travel Administration

A student may obtain an associate degree in tourism and travel administration, then continue at the University of New Haven and earn a bachelor of science degree in the field.

Required Courses

The tourism and travel administration major must complete 66 credit hours, including the courses listed below:

TT 165 Principles of Tourism and Travel
TT 166 Touristic Geography
TT 215 Supervised Field Experience I
TT 217 Supervised Field Experience II
TT 267 Shipping and Cruises
TT 268 Land Transportation
TT 370 Airline Transportation and Reservations Procedures
TT 375 Travel Agency Management
HR 100 Introduction to the Hospitality Industry
HR 210 Hotel Front Office Systems
CO 100 Human Communication
E 105 Composition
E 110 Composition and Literature
HS 101 Foundation of the Western World
M 127 Finite Mathematics
PS 241 International Relations

Plus four tourism and travel administration required electives and two foreign languages or electives

Minor Program

A total of 18 semester hours of course work must be earned in order for a student to declare the field of tourism and travel administration as a minor area of study. The course work, 18 credits, is identical to the requirements of the certificate program.

Tourism and Travel Administration Certificate

Designed for those currently employed, or planning to be employed, in the tourism and travel industries, the program will prepare the individual for entry level to middle-supervisory positions at travel agencies, tour package ticket agencies, airline and land transportation installations and other tourism-related facilities. All students pursuing a certificate in tourism and travel administration are required to complete 18 credit hours. The courses are listed below:

Required Courses

TT 165 Principles of Tourism and Travel
TT 166 Touristic Geography
TT 267 Shipping and Cruises
TT 268 Land Transportation
TT 370 Airline Transportation and Reservations Procedures
TT 375 Travel Agency Management

Department of Dietetics and Institutional Management

Chairman: Assistant Professor Margaret O'Donnell, R.D.

Assistant Professors: Beverly Bentivegna, R.D., M.Ed., Pennsylvania State University; Margaret O'Donnell, R.D., M.A., New York University.

Institutional food service administration careers are focused toward mass volume feeding in schools, universities, hospitals and other health care facilities, residences for children and retirees, camps, community centers, transportation, armed forces, industrial plants and correctional institutions. The efficient management and supervision of such an extensive array of food service systems offers an almost unlimited challenge to students to prepare themselves academically and practically to assume responsibilities in the hospitality industry.

Dietitians are specialists educated for a profession responsible for the nutritional care of individuals and groups. This care includes the application of the science and care of human nutrition in helping people elect and obtain food for the primary purpose of nourishing their bodies in health or disease throughout the life cycle. This participation may be in single or combined functions; in food service systems management; in extending knowledge of food and nutrition principles; in teaching these principles for application according to particular situations; or in dietary counseling.

B.S., General Dietetics

The university's program in general dietetics is designed for the person seeking a career as a registered dietitian (R.D.). The program emphasizes administrative dietetics which is the management of food service systems with emphasis on health-related facilities.

Students who earn the B.S. degree in general dietetics may apply for membership in the American Dietetic Association. A student who completes professional training in an approved internship program, or who completes an accredited master's degree program with the accompanying six months approved work experience under the supervision of a registered dietitian, and passes an examination given by the American Dietetic Association, becomes a registered dietitian.

It is suggested that students enrolled in the general dietetics program choose a minor in nutrition, chemistry, biology or computer science.

Required Courses

A minimum total of 125 credit hours including the university core curriculum must be completed for the bachelor of science degree in general dietetics. The program includes the following courses:

DI 214 Food Service Management Systems I
DI 215 Field Experience I

DI 216 Food Service Management Systems II
DI 218 Food Service Management Systems III
HR 202 Volume Food Purchasing
HR 304 Cultural Understanding of Food and Cuisines
HR 321 Hotel, Restaurant and Tourism Accounting and Auditing
HR 411 Equipment Layout and Design
A 101 Introduction to Financial Accounting
BI 115 Nutrition and Dietetics
BI 116 Fundamentals of Food Service
BI 121 General and Human Biology I (Lab)
BI 301 Microbiology (Lab)
BI 315 Nutrition and disease
BI 461 Biochemistry (Lab)
CH 103 Introduction to General Chemistry
CH 104 General Chemistry Lab
CH 107 Elementary Organic Chemistry
CH 108 Elementary Organic Chemistry Lab
CO 410 Management Communication Seminar
CS 107 Introduction to Data Processing/Basic
E 220 Writing for Business and Industry
EC 133 Principles of Economics I
HS 101 Foundations of the Western World
M 127 Finite Mathematics
MG 125 Management and Organization
P 111 Introduction to Psychology
P 315 Human and Animal Learning
PA 308 Health Care Delivery Systems
SO 221 Cultural Anthropology

Plus five dietetics and institutional management *and* two hotel and restaurant management required electives

B.S., Institutional Food Service Administration

A student earning a bachelor of science degree in institutional food service administration is able to focus on the development of those managerial skills, competencies and abilities essential to all professional managers, with specific concentration in those areas characteristic of institutional feeding. Mass feeding on an institutional basis can be divided into four major areas of the food service industry: college and university, business and industry, health care and governmental installations and community nutrition.

Required Courses

A minimum total of 125 credit hours including the university core curriculum must be completed for the bachelor of science degree in institutional food service administration. The program includes the following courses:

DI 214 Food Service Management Systems I
DI 216 Food Service Management Systems II
DI 218 Food Service Management Systems III
DI 215 Field Experience I
HR 202 Volume Food Purchasing
HR 304 Cultural Understanding of Food and Cuisines
HR 321 Hotel, Restaurant and Tourism Accounting and Auditing
HR 322 Marketing and Sales Promotion
HR 325 Food and Labor Cost Control
HR 330 Institutional Environmental Service and Housekeeping

HR 410 Systems and Operations
HR 411 Equipment Layout and Design
A 100 Introduction to Financial Accounting
BI 115 Nutrition and Dietetics
BI 116 Fundamentals of Food Service
BI 121 General and Human Biology I (LAB)
BI 315 Nutrition and Disease
CH 103 Introduction to General Chemistry
CH 104 General Chemistry Lab
CO 410 Management Communication Seminar
CS 107 Introduction to Data Processing/Basic
E 220 Writing for Business and Industry
EC 133 Principles of Economics I
HS 101 Foundations of the Western World
M 127 Finite Mathematics
MG 125 Management and Organization
P 111 Introduction to Psychology
P 315 Human and Animal Learning
PA 308 Health Care Delivery Systems
SO 221 Cultural Anthropology

Plus five dietetics and institutional management *and* three hotel and restaurant management required electives

A.S., Dietetic Technology

Dietetic technicians occupy key supervisory roles in major hospitals and other health care facilities, where they work under the direction of registered dietitians. In smaller health care facilities, technicians undertake key management roles where they often head the dietary department under the periodic supervision of a consulting registered dietitian.

In this program, students are required to complete a total of 450 hours of field experience in a health-related facilty, under the supervision of a registered dietitian.

The dietetic technician program at the University of New Haven has full accreditation from the American Dietetic Association.

Students who receive an A.S. degree in dietetic technology may transfer their credits to the B.S. degree in general dietetics at UNH.

Required Courses

To complete the A.S. degree in dietetic technology, students must complete 65 credit hours, including the courses listed below:

DI 214 Food Service Management Systems I
DI 215 Field Experience I
DI 216 Food Service Management Systems II
DI 217 Field Experience II
DI 218 Food Service Management Systems III
DI 219 Field Experience III
DI 221 Field Experience IV
DI 222 Dietetic Seminar
HR 200 Volume Food Production I
HR 202 Volume Food Purchasing
BI 115 Nutrition and Dietetics
BI 121 General and Human Biology I (LAB)
BI 315 Nutrition and Disease
CH 103 Introduction to General Chemistry
CH 104 General Chemistry Lab

EC 133 Principles of Economics I
M 127 Finite Mathematics
MG 125 Management and Organization
PA 150 Health Care I
PA 151 Health Care II
PA 308 Health Care Delivery Systems
SO 113 Introduction to Sociology

Plus one dietetics required elective

Minor Programs

A total of 18 semester hours of course work must be earned in order for a student to declare the fields of dietetics or institutional food service administration as a minor area of study, The course work, 18 credits, is identical to the requirements of the various certificate programs.

See the biology department section in the School of Arts and Sciences for information on the minor in nutrition.

Any student who has earned a bachelor or graduate degree in another discipline other than dietetics, and who wishes to complete the requirements for Plan IV of the American Dietetic Association, must take a minimum of six courses at the University of New Haven, if verification by ADA is their goal.

Dietetics & Institutional Management Certificate Programs

Dietary Management Certificate

This certificate is specifically designed for the individual interested in food service in health related facilities. Emphasis will be placed on learning effective methods of management, food production and employee motivation. All students are required to take 18 credits.

Required Courses

DI 214 Food Service Management Systems I
DI 216 Food Service Management Systems II
DI 218 Food Service Management Systems III

Plus three dietetics or hotel and restaurant management required electives

Institutional Food Service Administration Certificate

Developed for food service personnel presently employed in institutional food service operations, this program builds supervisory skills for hospital, college, nursing home, university, health care centers and correctional institution food service departments. All students are required to take 18 credits. The courses are listed below.

Required Courses

HR 202 Volume Food Purchasing
DI 214 Food Service Management Systems I
HR 321 Hotel, Restaurant and Tourism Accounting and Auditing
HR 410 Systems and Operations
HR 411 Equipment Layout and Design

Plus one dietetics or hotel and restaurant management required elective

SCHOOL OF PROFESSIONAL STUDIES AND CONTINUING EDUCATION

Ralf E. Carriuolo, Ph.D., dean

The School of Professional Studies and Continuing Education provides educational services for three distinct types of students: those who wish to major in degree programs specifically oriented toward a particular career path; those who seek alternate periods of study and of employment in career-related jobs to help finance their undergraduate education and obtain valuable on-the-job experience; and those adult students pursuing a part-time course of study, usually in the evening hours, for degree programs, for technical updates in their field or for state and/or national accreditations and for personal or professional development.

To service these varied and important needs appropriately, the school is divided into five distinct divisions: the Department of Professional Studies, Cooperative Education, the Division of Evening Studies, UNH in Southeastern Connecticut and the Division of Special Studies.

Degrees

Department of Professional Studies

The Department of Professional Studies offers degree programs in these career areas: aviation science, fire science, occupational safety and health, and professional studies (an individually created educational program).

Bachelor of Science

Air Transportation Management
Arson Investigation
Fire Science Administration
Fire Science Technology
Occupational Safety and Health Administration
Occupational Safety and Health Technology
Professional Studies

Associate in Science

Aviation Science
Fire and Occupational Safety
Occupational Safety and Health Administration
Occupational Safety and Health Technology
Professional Studies

Certificate Programs

Arson Investigation
Fire Prevention
Hazardous Materials
Industrial Fire Protection
Occupational Safety and Health

Master of Science

Occupational Safety and Health Management
Fire Science

Professional Certificate Programs

Fire Science
Industrial Hygiene
Occupational Safety

Senior Professional Certificate Program

Occupational Safety and Health Management

Cooperative Education

The Cooperative Education program enables the student to combine practical work experience with his or her college education. When a student enrolls in UNH's Co-op program, he or she will earn a bachelor's degree *and* a salary. And because the student works in a major-related field, he or she will be able to explore career interests first-hand.

Division of Evening Studies

A wide variety of undergraduate courses and complete degree programs are offered in evening sessions during the fall and spring semesters, as well as during an extensive summer term and intersession. All offerings are credit-bearing courses and lead to bachelor and associate degrees in all the academic schools throughout the university. Courses are identical to those offered during the daytime hours and are staffed by the academic departments with the same full and part-time scholars who teach in the day division. Degrees conferred by the university do not distinguish between programs completed during the daytime or evening hours.

The Division of Evening Studies also administers the UNH/University of Siena summer program for the Arts, a six-week intensive study course in central Italy for undergraduate or graduate credit.

UNH in Southeastern Connecticut

Although a private institution, the University of New Haven currently operates nine learning centers throughout Connecticut serving the general public. The largest of these, UNH in Southeastern Connecticut, is located in the Groton/New London area and enrolls more than 2500 part-time adult students in many fully-supported undergraduate programs. Students are encouraged to investigate the

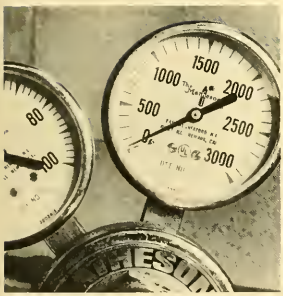
trimester offerings of all the learning centers, availing themselves of a vast array of course offerings in a variety of time schedules.

Division of Special Studies

All seminars and courses for professional certification and development are offered through the Division of Special Studies. Annual symposia for occupational safety and health professionals, fire and arson investigators, professionals in the hospitality industries and other specific employment groups are hosted at the university by this division. Courses in real estate, engineering certification preparation, finance and accounting, personal and main-frame computer applications, and other professional training are scheduled on a year-round basis at several locations throughout Connecticut.

Based on the current nationally recognized standards, continuing education units (CEUs), rather than credits, are awarded for Special Studies courses.

Workshops for professional development are offered on such topics as time management, supervisory training, management for secretaries and/or administrative assistants, are available on both an open enrollment and an in-house basis for corporations.



Department of Professional Studies

Chairman: Brad T. Garber, Ph.D.

Professors: Brad T. Garber, Ph.D. University of California at Berkeley; Frederick Mercilliott, D.A., Western Colorado University

Associate Professor: Robert P. Barrows, M.B.A., University of Connecticut

Assistant Professors: David P. Hunter, M.P.A. University of New Haven; Matthew H. McConeghy, Ph.D., University of Connecticut; Robert S. Sawyer, M.S., University of New Haven

Senior Lecturer: Richard H. Strauss, M.P.A., University of New Haven

Practitioners-in-Residence: Hamdi M. Balba, Ph.D., University of California at Berkeley; William S. Johnson, B.S., Southern Connecticut State College

The Department of Professional Studies offers several degree programs for students interested in specific employment-related areas and for those who wish to create their own unique structured course of study.

Degree programs offered in professional studies are: aviation science (technology and management), fire science (technology, investigation and administration), and occupational safety and health (administration and technology).

The department also coordinates the A.S. and B.S. in professional studies, a program of specialized curriculum designed for the individual student who seeks an education drawn from a number of areas and disciplines.

Aviation

Director: David P. Hunter, M.P.A.

The aviation industry, both commercial and general, is dynamic, employing 1.5 million people as flight and service personnel and in manufacturing. As the industry continues to expand there will be a need for additional personnel with technical skills.

The aviation program prepares students to meet the demands of the future and the career goals of the individual.

The associate in science degree in aviation science provides the students with a two-year degree program which consists of the technical aviation background required for employment as a pilot. Additionally, a concentration of courses from the Schools of Engineering, Business, or Arts and Sciences is required. Following completion of the associate's degree, students may continue for a bachelor's degree in air transportation management or in a program designed to meet their individual career objectives.

The bachelor of science degree in air transportation management provides the student selecting the flight option with the technical aviation background required of the professional pilot. A strong foundation of management and specific aviation management courses providing knowledge and skills required of pilots and executives in the aviation industry is an integral part of this program.

Students majoring in other programs at the university may select any of the aviation courses as electives.

The flight training portion of the program includes private, commercial, instrument, instructor and multi-engine FAA certification, and may be completed at any of the university-approved regional flight schools: NewAir, Inc. (Tweed-New Haven Airport), Coastal Air Services (Groton-New London Airport), Cross-Country Aviation (Brainard Airport), Danbury School of Aviation (Danbury Municipal Airport) and Kelaire (Bridgeport-Sikorsky Airport).

The university owns and maintains a single engine aircraft for flight training. In addition, all students enrolled in flight courses can supplement their training with the school's flight simulator.

Aviation Association

The Aviation Association is the campus student activities club. They organize trips, airmeets and FAA seminars throughout the school year.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

The Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the university core curriculum. See page 67 for information.

B.S., Air Transportation Management

Students earning the B.S. in air transportation management must complete 121 credit hours or 131 hours if the flight option is chosen. (Flight option courses are marked *.) This degree is offered through the School of Business. These courses must include the university core curriculum and the courses listed below:

Required Courses

AE 100 Aviation Science—Private
AE 105 Primary Flight—Solo*
AE 110 Aviation Meteorology
AE 115 Private Pilot Flight*
AE 130 Aviation Science—Commercial
AE 135 Commercial Flight I*
AE 140 Concepts of Aerodynamics
AE 145 Commercial Flight II*
AE 200 Aviation Science—Instrument
AE 205 Commercial Flight III*
AE 210 Aircraft Powerplants, Systems and Components
AE 230 Flight Instructor Seminar
AE 235 Instructor Flight *or* AE 245 Multi-Engine Rating*
AE 310 Air Transportation Management
AE 400 Airport Management
AE 410 Corporate Aviation Management
AE 430 Aviation Safety Seminar
MG 350 Advanced Management
MK 470 Business Logistics

A.S., Aviation Science

A total of 70 semester hours of credit is required for the associate in science degree in aviation science. The program is designed to be completed in two years.

Required Courses

In addition to the aviation courses listed below, students should select an area of concentration of courses in consultation with the director of aviation programs, from a program within another school of the university. This concentration will prepare students for the continuation of their education toward a bachelor's degree to meet their individual needs and career objectives.

AE 100 Aviation Science—Private
AE 105 Primary Flight—Solo*
AE 110 Aviation Meteorology
AE 115 Private Pilot Flight*
AE 130 Aviation Science—Commercial
AE 135 Commercial Flight I*
AE 140 Concepts of Aerodynamics
AE 145 Commercial Flight II*
AE 200 Aviation Science—Instrument
AE 205 Commercial Flight III*
AE 210 Aircraft Powerplants, Systems and Components
AE 230 Flight Instruction Seminar
AE 235 Instructor Flight* or AE 245 Multi-Engine Rating*
EC 133 Principles of Economics

One history elective
Two math or science courses

*Flight training courses

Professional Pilot Certificate

The aviation department offers a professional pilot certificate. Students must complete between 28 and 31 credit hours to earn a certificate. Students may choose to take these courses for credit or non-credit. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, students who are admitted may apply the credits earned toward the requirements for a degree program.

Required Courses

All students are required to take a minimum of 28 credit hours (or 31 credit hours if AE 235 is taken). The courses are listed below:

AE 100 Aviation Science—Private
AE 105 Primary Flight—Solo*
AE 110 Aviation Meteorology
AE 115 Private Pilot Flight*
AE 130 Aviation Science—Commercial
AE 135 Commercial Flight I*
AE 140 Concepts of Aerodynamics
AE 145 Commercial Flight II*
AE 200 Aviation Science—Instrument
AE 205 Commercial Flight III*
AE 210 Aircraft Powerplants and Systems
AE 230 Flight Instructor Seminar
AE 235 Instructor Flight* or AE 245 Multi-Engine Rating*

*Flight training courses.

Fire Science

Director: Frederick Mercilliott, D.A.

In the last six years, the number of fires in this country has continued to increase while arson increased at an even more alarming rate.

This increase in the loss of life and property has triggered a rapidly growing need for trained professionals in the fire science field as administrators, investigators and fire protection technicians and engineers. To meet this need, the University of New Haven offers four undergraduate degrees and four certificate programs that provide curricula designed for those entering the field.

Students in the bachelor's degree programs must complete all the credits required for the associate in science with a major in fire and occupational safety, or their equivalent, earned at the University of New Haven or elsewhere. Equivalent work substitution is subject to evaluation by the director of fire science.

The student is advised to check with the director of fire science or the specific instructor for the proper background for various fire science courses. It is recommended that fire science courses be taken in the proper sequence along with the necessary electives.

For those students completing their bachelor's degrees, the university is now offering a graduate professional certificate program in fire protection and a master's degree in fire science with an administrative or technology concentration.

The Co-op Program

The department participates in the cooperative education program (Co-op) which enables you to combine practical, paid work experience in your career field with your college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

The Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the university core curriculum. See page 67 for information.

B.S., Arson Investigation — Minor in Criminal Justice

The bachelor of science program in arson investigation provides a much-needed program for the numerous firefighters, police officers and insurance people who must deal with arson, the fastest growing crime in the country.

By combining studies in arson investigation with a minor in criminal justice, students will become knowledgeable in the behavioral sciences, criminal justice and criminal law needed by an arson investigator.

Required Courses

Students earning the B.S. in arson investigation must complete 127 credit hours including the university core curriculum and those courses listed below:

FS 106	Fire Strategy and Tactics
FS 201	Essentials of Fire Chemistry with Laboratory
FS 202	Principles of Fire Science Technology
FS 207	Fundamentals of Fire Prevention
FS 301	Building Construction, Codes and Standards
FS 303	Fire Protection Fluids and Systems
FS 304	Fire Detection and Control
FS 306	Fire and Casualty Insurance
FS 402	Arson Investigation I
FS 404	Special Hazards Control
FS 405	Fireground Management
FS 406	Arson Investigation II
FS 407	Arson Investigation II Laboratory
A 111	Introductory Accounting I
CH 103	General Chemistry I
CH 104	General Chemistry I Laboratory
CJ 102	Criminal Law *or* FS 408 Fire Prevention Law
CJ 215	Introduction to Forensic Science or FS 501 Internship
CJ 217	Criminal Procedure I
CJ 218	Criminal Procedure II and Evidence
CJ 221	Juvenile Delinquency
CJ 311	Criminology
EC 133	Principles of Economics I
IE 223	Personnel Administration
M 127	Finite Math
M 228	Elementary Statistics
P 111	Introduction to Psychology
P 336	Abnormal Psychology
PA 101	Introduction to Public Adminstration
SO 113	Sociology

Plus one science elective and one science elective with laboratory

B.S., Fire Science Administration

Students majoring in fire science administration learn how to bring contemporary business management techniques to the administration and development of a modern fire department.

Required Courses

Students earning the B.S. in fire science administration must complete 128 credit hours. These courses must include those required for the A.S. in fire and occupational safety, which are listed later in this section, the university core curriculum plus the courses listed below.

FS 301	Building Construction, Codes and Standards
FS 303	Fire Protection Fluids and Systems
FS 304	Fire Detection and Control
FS 306	Fire and Casualty Insurance
FS 402	Arson Investigation I
FS 403	Process and Transportation Hazards
FS 404	Special Hazards Control
FS 405	Fireground Management
FS 406	Arson Investigation II
FS 498	Research Project
FS 499	Research Project
A 111	Introductory Accounting
EC 133	Principles of Economics
IE 303	Cost Control
MG 231	Industrial Relations
PA 408	Collective Bargaining in the Public Sector
SO 113	Sociology

Recommended Courses

CJ 201	Principles of Criminal Investigation
CJ 215	Introduction to Forensic Science
FS 304	Special Hazards Control

B.S., Fire Science Technology

As its name implies, this program is more deeply concerned with the technological aspects of fire science. The stress is primarily on fire prevention. Many of the courses cover various engineering fields adapted to the problems that will confront the fire technologist. The essentials of fire chemistry; dynamics; statics; the way in which materials behave under various conditions of stress including heat, process and transportation; the design of industrial structures and conveyances for the maximum protection of the worker and the public are essential areas of study.

Courses in fire prevention play a role almost equal to that of fire investigation. These include an investigation of fire suppression fluids and systems, hydraulics and thermodynamics. The student who completes this program is a planner, a designer of fire prevention systems, and a judge of facilities and equipment.

Required Courses

Students majoring in fire science technology are required to complete 128 to 132 credit hours including the university core curriculum. In addition to completing the requirements for the A.S. degree in fire and occupational safety, students must complete the following courses:

FS 301	Building construction, Codes, and Standards
FS 303	Fire Protection Fluids and Systems
FS 304	Fire Detection and Control

FS 308 Industrial Fire Protection I
FS 309 Industrial Fire Protection II
FS 306 Fire and Casualty Insurance
FS 402 Arson Investigation I
FS 403 Process and Transportation Hazards
FS 404 Special Hazards Control
FS 405 Fireground Management
FS 406 Arson Investigation II
FS 498 Research Project
FS 499 Research Project
CE 201 Statics
CE 302 Building Construction
CE 306 Hydraulics
CE 316 Code Administration
CE 407 Professionalism and Ethical Practice of Engineering
M 117 Calculus I
M 118 Calculus II
MT 200 Engineering Materials
SO 113 Sociology

Recommended Courses

ME 204 Dynamics
ME 301 Thermodynamics

A.S., Fire and Occupational Safety

The two-year associate in science degree offers students a well-rounded program in safety planning and techniques in both the fields of occupational safety and fire science.

Many students continue for their bachelor's degrees in the fire science field and/or become valuable members of municipal fire departments and safety investigation teams.

Required Courses

To complete the associate in science degree in fire and occupational safety, 67 credit hours are required including those courses listed below:

FS 105 Municipal Fire Administration
FS 106 Fire Strategy and Tactics
FS 201 Essentials of Fire Chemistry with Laboratory
FS 202 Principles of Fire Science Technology
SH 100 Safety Organization and Management
SH 200 Elements of Industrial Hygiene
SH 400 Occupational Safety and Health Legal Standards
BI 121 General and Human Biology with Laboratory (or other biology elective)
CH 115 General Chemistry I
CH 117 General Chemistry I Laboratory
CH 107 Elementary Organic Chemistry I
CH 108 Elementary Organic Chemistry I Laboratory
IE 223 Personnel Administration
M 115 Pre-Calculus Mathematics
M 228 Elementary Statistics
MG 125 Management and Organization
P 111 Introduction to Psychology

Plus two science electives with laboratories

Minor in Fire Science

Any students wishing to minor in fire science should contact the director of their program. A minimum of 18 credit hours is required. The courses listed below are required unless a substitution is approved by the director of fire science.

Required Courses

FS 105 Municipal Fire Science Administration
FS 106 Fire Strategy and Tactics
FS 201 Essentials of Fire Chemistry with Laboratory
FS 202 Principles of Fire Science Technology
FS 303 Fire Protection Fluids and Systems
FS 304 Fire Detection and Control

Fire Science Certificate Programs

Coordinator: Frederick Mercilliott, D.A.

The fire science department offers certificates in fire arson investigation and fire science. Students must complete between 21 and 30 credit hours depending on the program to earn a certificate. Students may choose to take these courses for credit or non-credit. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, students who are admitted may apply the credits earned toward the requirements for a bachelor's degree in fire science.

Arson Investigation Certificate

This certificate is designed to provide those in either the public or private sector with the scientific and legal knowledge needed to analyze situations for the possibility of arson. All students are required to take 30 credit hours, including the courses listed below:

Required Courses

CJ 102 Criminal Law
CJ 201 Criminal Investigation
CJ 215 Introduction to Forensic Science *or*
FS 105 Municipal Fire Administration*
FS 201 Fire Science Chemistry
FS 207 Fire Prevention
FS 304 Fire Detection and Control
FS 402 Arson Investigation I
FS 406 Arson Investigation II
FS 501 Internship
FS 599 Independent Study

*Criminal justice majors may substitute PA 101 Introduction to Public Administration; transfer students may substitute police administration.

Fire Prevention Certificate

This certificate is designed to provide the essentials of fire science theory, fire detection and control techniques, and the administrative/legal aspects of fire protection. The program is applicable to the needs of both the private and public sectors of the fire protection profession.

All students are required to take 21 credit hours, including the courses listed below:

Required Courses

FS 207 Fire Prevention
FS 301 Building Construction, Codes and Standards
FS 303 Fire Protection Fluids and Systems
FS 304 Fire Detection and Control
FS 402 Process and Transportation Hazards
FS 404 Special Hazards and Controls

A security course (CJ) or safety course (SH) may be substituted for FS 301, FS 304 or FS 403

Industrial Fire Protection Certificate

This certificate provides the student with the basic essentials of fire science theory and safety procedures necessary for a position in the private sector. All students must take 24 required credits plus 6 elective credits for this certificate.

Required Courses

FS 207 Fundamentals of Fire Protection
FS 303 Fire Protection Fluids and Systems
FS 304 Fire Detection and Control
FS 308 Industrial Fire Protection
FS 309 Industrial Fire Hazards
FS 403 Process and Transportation Hazards
FS 404 Special Hazards and Control
FS 408 Fire Protection Law *or* FS 400 OSH Legal Standards

Plus electives approved by the department chairman

Hazardous Materials Certificate

This certificate was designed to familiarize those who work with hazardous materials, and those interested in the fire and safety aspects of occupational and industrial health with the proper handling procedures, storage and hazards of these materials. The students will also learn the proper procedures to take if/when an accident or fire does occur. Students must take 20 credits, plus a Hazardous Spills Workshop.

FS 201 Fire Science Chemistry
FS 308 Industrial Fire Protection I
FS 403 Process & Transportation of Hazardous Materials
FS 404 Special Hazards and Controls
FS 500 SS: Chemistry of Hazardous Materials
PH 130 Radiation Safety

Plus a Hazardous Spills Workshop (*offered every semester for no credit*)

Occupational Safety and Health

Director: Brad T. Garber, Ph.D.

In the past five years, the global community has become painfully aware of the importance of safety procedures and precautions in our everyday survival: the accidental release of lethal gases in India and the United States; the shuttle Challenger disaster; the cyanide deaths from altered Tylenol capsules, to mention only a few cases. Clearly, safety decision-making has been brought to the forefront of corporation management. No employer today can afford to relegate safety to a minor role in the organizational hierarchy.

This great interest in safety issues has generated a growing demand for professional practitioners in the field. Industry, retailing, commerce, communications, construction and labor unions, as well as local, state and federal governments, need competent safety specialists.

The demands placed upon the safety professional require a broad background in chemistry, physics, engineering, psychology and biology. This interdisciplinary program draws upon the resources of the entire university. In addition to required courses, students choose from among a diversified offering of restricted and free electives with a balance of courses designed to meet the needs and interests of individual students.

In addition to the four-year bachelor of science programs in occupational safety and health administration and technology, the university also offers two-year associate degree programs and an occupational safety and health certificate. At the graduate level, a complete program is offered which includes a master of science in occupational safety and health management as well as two professional certificates and a senior professional certificate.

In developing course content, accreditation guidelines laid down by the American Society of Safety Engineers (ASSE), the Board of Certified Safety Professionals (BCSP), and the National Institution of Occupational Safety and Health (NIOSH) have been followed.

The Co-op Program

The department participates in the cooperative education program (Co-op) which combines practical, paid work experience in the career field with college education. For further details see "The Co-op Program" in the School of Professional Studies and Continuing Education section or consult the Co-op office.

B.S., Occupational Safety and Health Technology

Both associate and bachelor's degrees are offered in the field of occupational safety and health technology. These degree programs provide strong technical preparation with courses in calculus, chemistry, physics, biology and other disciplines related to the evaluation and resolution of complex safety problems.

In addition to the the requirements for the A.S. degree below, bachelor's candidates must also complete the following courses. The complete program totals 130 credit hours:

Required Courses

BI 121 General & Human Biology I
BI 131 General & Human Biology I Laboratory
BI 122 General & Human Biology II
BI 132 General & Human Biology II Laboratory
FS 304 Fire Detection & Control
FS 308 Industrial Fire Prevention I
FS 309 Industrial Fire Prevention II
IE 348 Manufacturing Processes
M 117 Calculus I
M 118 Calculus II
P 111 Psychology
PH 130 Radiation Safety
SH 210 Sound, Hearing & Noise
SH 308 Industrial Fire Prevention I
SH 309 Industrial Fire Prevention II
SH 400 OSH Legal Standards
SO 113 Sociology

Plus 15 credit hours of restricted electives

B.S., Occupational Safety and Health Administration

A second group of degrees is offered in the field of occupational safety and health administration. These programs put less emphasis in the technical areas, but broaden the scope of the program into the areas of management and decision-making necessary to give the student a broad-based outlook necessary to direct safety functions.

In addition to the requirements for the A.S. degree below, bachelor's candidates must also complete the following courses; for a combined total of 123 credit hours:

Required Courses

BI 121 General & Human Biology I
BI 131 General & Human Biology I Laboratory
BI 122 General & Human Biology II
BI 132 General & Human Biology II Laboratory
E 230 Public Speaking
FS 208 Instructor Methodology
FS 304 Fire Detection and Control
IE 223 Personnel Management
IE 348 Manufacturing Processes
MG 125 Management and Organization
PH 130 Radiation Safety
SH 210 Sound, Hearing and Noise
SH 308 Industrial Fire Protection I
SH 309 Industrial Fire Protection II
SH 400 OSH Legal Standards

12 additional hours of restricted electives
3 additional hours of electives

A.S., Occupational Safety and Health Technology

Students earning the A.S. degree in occupational safety & health technology must complete 66 credit hours including the courses listed below:

Core Courses

E 105 English Composition
E 110 English Composition & Literature

Plus a literature or philosophy elective

Required Courses

CH 115 General Chemistry I
CH 117 General Chemistry I Laboratory
CH 116 General Chemistry II
CH 118 General Chemistry II Laboratory
CJ 105 Introduction to Security
CS 105 Introduction to Computers - COBOL
E 220 Writing for Business & Industry
FS 201 Essentials of Fire Chemistry w/Lab
IE 223 Personnel Administration
IE 303 Cost Control
M 115 Pre-Calculus Mathematics
M 228 Elementary Statistics
PH 103 General Physics I
PH 105 General Physics I with Laboratory
PH 104 General Physics II
PH 106 General Physics II with Laboratory
SH 100 Safety Organization & Management
SH 110 Accident Conditions & Controls
SH 200 Elements of Industrial Hygiene

Plus 9 additional credit hours of electives

A.S., Occupational Safety and Health Administration

Students earning the A.S. in occupational safety and health administration must complete 63 credit hours including the courses listed below:

Core Courses

E 105 English Composition
E 110 English Composition & Literature
CO 100 Human Communication *or* E 114 Speech
SO 113 Sociology

Literature or philosophy requirement

Plus 3 hours of restricted electives

Required Courses

CH 103 Intro. to General Chemistry
CH 104 Intro. to General Chemistry Laboratory
CH 107 Elementary Organic Chemistry
CH 108 Elementary Organic Chemistry Laboratory
CJ 105 Introduction to Security
CS 105 Introduction to Computers - COBOL

E 220 Writing for Business and Industry
FS 106 Fire Strategy and Tactics
FS 201 Essentials of Fire Chemistry w/Lab
IE 303 Cost Control
M 127 Finite Mathematics
M 228 Elementary Statistics
P 111 Psychology
SH 100 Safety Organization and Management
SH 110 Accident Conditions and Controls
SH 200 Elements of Industrial Hygiene

Occupational Safety and Health Certificate

Director: Brad T. Garber, Ph.D.

The department offers an occupational safety and health certificate for which students must complete 18 credit hours. Students may choose to take these courses with or without credit. For those students who take the non-credit option, it is not necessary to apply for admission to the university. However, if you are admitted at a later date, the credits earned may be applied toward the requirements for a degree program.

This program of study covers the fundamentals of on-the-job safety and health as well as the requirements of the OSHA law. These courses provide an introduction to most situations that a new safety professional would have to confront.

Required Courses

SH 100 Safety Organization and Management
SH 110 Accident Conditions and Controls
SH 200 Elements of Industrial Hygiene
SH 210 Sound-Hearing-Noise
SH 400 OSHA Legal Standards
FS 304 Fire Detection and Control

Professional Studies*

Coordinator: Brad T. Garber, Ph.D.

In today's workplace of ever-increasing specialization, business and industry oftentimes develop needs unmet by traditional undergraduate degree programs. Through careful planning, the creative student can develop a unique, individualized course of study leading to a degree in professional studies that provides for a broad-based education in a number of interlocking academic areas. Unlike the general studies programs, which are for students whose career goals are currently undefined, the professional studies programs are for students who know exactly what they want but cannot find it in traditional degree programs.

Students interested in creating professional studies programs are urged to contact the chair of the professional studies department who, in conjunction with the dean and a faculty advisory committee, will work with the student in the creation of an appropriate sequence of courses.

* This program is currently under consideration for licensure by the Connecticut State Board of Higher Education (4/86).

B.S., Professional Studies

For the goal-oriented student, the B.S. in professional studies provides the necessary flexibility to create an entire degree program to fit the student's specific educational needs. Drawing on courses from every academic area in the university and even creating new courses, the B.S. in professional studies provides employment possibilities in areas combining engineering, business and manufacturing, and the humanistic, social and natural sciences.

Designed by the student in cooperation with appropriate faculty and practitioners in the field, the B.S. curriculum allows the student full access to the wide range of faculty expertise throughout the university.

Students must present their proposed program, approved by a faculty adviser, to a faculty Advisory Committee for final approval no later than the close of their freshman year. Transfer students or those currently enrolled at the university in other programs must enter the B.S. in professional studies before completing 84 applicable credit hours.

Required Courses

Students must complete 121 credit hours including the University Core Curriculum (see page 67) and those courses listed below:

Professional Studies Curriculum (designed by student)	15 courses
Minor Elective Curriculum (designed by student)	7 courses
Open Elective Curriculum (designed by student)	7 courses

A.S., Professional Studies

For students whose career paths lead to areas not clearly defined by existing major programs, the A.S. in professional studies provides a self-directed program of study utilizing the resources of a variety of departments throughout the university. Similar to the B.S. in professional studies, the A.S. degree allows students to create their own courses of study, chosen from existing courses or ones created specifically for their programs. In conjunction with a faculty member and the chairman of the professional studies department, the A.S. program of study is carefully reviewed and approved by an Advisory Committee to ensure appropriate educational content. Courses in the A.S. program are applicable to other programs at the bachelor's degree level.

Required Courses

To earn an associate of science in professional studies, students must complete 61 credit hours, including those listed below:

Professional studies curriculum (designed by student)	10 courses
Open elective curriculum (designed by student)	3 courses

E 105	Composition
E 110	Composition and Literature
HS 101	Foundations of the Western World

Quantitative skills course
Computer science course
Scientific laboratory course
Social science course

Cooperative Education

Director: Joseph J. Arnold, Associate Dean, M.S., Southern Connecticut State University
Associate Director: Cheryl Lison, M.A., University of Connecticut

Cooperative education (Co-op) is an academic program that enables students to combine career-oriented, paid, full-time work experience with their college education. The Co-op student benefits by being able to explore career interests firsthand, by gaining valuable work experience related to his or her major, and by helping to pay for a four-year college degree.

How It Works

The structured Co-op schedule outlined below is designed to allow students to combine their full four-year academic program with three co-op work periods of four months each, all within a total time period of four years plus one summer semester.

Year	Fall	Spring	Summer
1	Classes	Classes	Vacation
2	Classes	Classes	Work
3	Classes	Work	Classes
4	Work	Classes	Classes

Part-time day or evening students are also eligible for Co-op work assignments after completing a minimum of 60 semester hours of academic work.

Transfer students will be considered eligible for Co-op placement on an individual basis. In most instances a transfer student must attend at least nine semester hours of academic work at UNH.

UNH's Co-op program does more than help finance school expenses. The student gets out into the real world of his/her chosen career, meeting and getting to know people, gaining experience and insight—which means a valuable head start in today's competitive job market.

The Co-op program is open to all students who meet the grade point standard set by their academic department—usually a minimum of a C+ in their major. Academic programs participating in the Co-op program are listed below. For additional information visit the Co-op office or speak with your academic adviser.

Participating Programs

Arts & Sciences

Applied Mathematics
- Natural Science (conc.)
- Computer Science (conc.)

Art
Biology
Biology - Premedical
- Predental
- Preveterinary

Biomedical Computing
Chemistry
Communication
Economics
English
Environmental Science
Fashion Design
General Studies
Graphic & Advertising Design
History
Interior Design
Journalism
Mathematics
Music & Sound Recording

Photography
Physics
Political Science
Psychology
Social Welfare
Sociology
World Music

Business

Accounting
- Financial
- Managerial

Air Transportation Management
Business Administration
Shipyard Management (career minor)
Business Economics
Communication
Criminal Justice
- Administration
- Corrections
- Forensic Science
- Law Enforcement Science
- Security Management

Finance
Human Resources Management
International Business
Management Information Systems
Management Science
Marketing
Public Administration

Engineering

Chemistry
Chemical Engineering
Civil Engineering
Computer Science
- Industrial Application
- Systems Software

Electrical Engineering
Industrial Engineering
Materials Technology
Mechanical Engineering
Mechanical Technology
- Shipbuilding

Industrial Technology
- Shipbuilding

Hotel, Restaurant & Tourism Administration

Dietetic Technology
Executive Housekeeping Administration
General Dietetics
Hotel & Restaurant Management
Institutional Food Service Administration
Tourism & Travel Administration

Professional Studies & Continuing Education

Arson Investigation
Aviation Science
Fire & Occupational Safety
Fire Science
- Administration
- Technology

Occupational Safety & Health
- Administration
- Technology

Professional Studies

Division of Evening Studies

The University of New Haven recognizes that learning is a life-long process. The Division of Evening Studies was established to service part-time, adult learners seeking to widen their academic horizons while pursuing a career. The division is dedicated to guiding these students into programs that best suit their strengths and career needs.

All offerings are credit-bearing courses and lead to bachelor and associate degrees in all the academic schools throughout the university. Courses are identical to those offered during the daytime hours and are staffed by the academic departments with the same full and part-time scholars who teach in the day division. Degrees conferred by the university do not distinguish between programs completed during the daytime or evening hours.

All degree programs are offered through the Division of Evening Studies except for applied mathematics-natural sciences, English and world music. Evening students must enroll in some day courses to receive a degree in these programs.

Most courses offered by the division, except for laboratory and certain four-semester-hour courses, meet in the early evening hours, one day per week.

An evening student may carry as few as two or as many as eleven semester hours, concurrently.

Admission Requirements

Generally, graduates of accredited secondary schools or persons who have a state high school equivalency diploma are eligible for admission.

Information regarding the examination for the state high school equivalency diploma may be obtained from evening admissions or by writing to the Bureau of Youth Services, State Department of Education, State Office Building, Hartford, Connecticut 06103.

In some cases, a person who has completed at least two years of secondary school with a satisfactory record may be considered for admission, provided he or she performs exceptionally well on the required placement examinations. The university is interested in evidence of maturity, motivation and formal education as prerequisites for admission. Such an admission will be tentative for one year, during which the student must pass the examinations for the state high school equivalency diploma. A person who has not completed at least two years of secondary school will not be considered for admission.

With the exception of auditors, students taking any course, whether for a degree or not, must meet admission requirements.

Applicants are required to take placement tests including mechanics of English and reading comprehension, and a mathematics examination. Scholastic aptitude or College Entrance Examination Board results, if satisfactory, are accepted in place of University of New Haven placement tests. Applicants who have completed 30 or more credit hours of work with a "C" average or better from an approved college or university may be exempt from taking placement tests depending upon the subject matter of the credit hour course work.

Admission Procedure

Applicants who seek admission should call or write the Division of Evening Studies for specific details. All applicants are encouraged to arrange for a personal interview which may be scheduled during or after normal business hours at the convenience of the applicant.

During the interview, the applicant will complete a personal data form, discuss and plan a program, and complete the necessary forms to request official copies of secondary school and college transcripts. The application fee is payable at that time.

Registration

All new students must register in person at the Evening Studies office. Currently enrolled students may register by mail prior to the announced deadline. Students who do not send their registration and required payments to the university on time must register in the Evening Studies office prior to making any payments in the Bursar's Office. Current students who fail to complete this procedure will have an invalid registration and cannot be assured of a seat in a class. A separate registration is required for each semester and any summer or intersession students wish to attend. Auditors follow the same procedure and pay the same tuition and fees as students enrolled for credit.

Payment of Tuition and Fees

The student completes the registration procedure by paying tuition and fees. There is a penalty fee for delaying either process beyond the end of the registration period.

Students are urged to plan their programs carefully before completing registration forms to avoid the need for changes. Once the registration period has ended, a change of registration fee is charged for each change made. The fee is payable when the form requesting the change is submitted.

Summer Sessions

Day and evening undergraduate courses are offered during the summer in a series of sessions ranging from four to nine weeks in length. The first session begins shortly after the close of the spring semester. Resident dormitory students may therefore continue their studies uninterrupted through the entire summer.

The university welcomes visiting students from other colleges and universities who wish to transfer summer courses back to their institution. Dormitory facilities are available for full-time summer study. Credits earned at the University of New Haven are generally accepted by other schools, but students are urged to consult with their home institutions for any special requirements or procedures for credit transfer.

University of New Haven students can attend one or more of the UNH summer sessions to lighten their study load during the regular academic year, to reduce the time required for a degree, to prepare for other courses, to make up courses or to take additional work beyond that required for a degree and still complete a program on schedule.

A list of courses offered during the summer is available from the Division of Evening Studies.

The University of New Haven offers a six-week summer program in the fine and performing arts at the University of Siena in Tuscany, Italy. Credit studies in music history, performance and composition, in the Italian language, and in art and cultural history studies are available through this program. For further information, please contact the Division of Evening Studies or Sessione Senese per la Musica e l'Arte, University of Siena, Dr. Joseph DelPrincipe, 595 Prospect Road, Waterbury, CT 06706, (203) 754-5741.

Winter Intersession

A number of undergraduate courses are offered during the period between the fall and spring semesters. These courses blend both traditional and innovative methods of instruction, including team teaching, field trips, lectures, laboratory work and research projects. A list of courses offered during intersession will be available from the Division of Evening Studies before each session.

Certificate Programs

Students can take their first step towards an undergraduate degree by registering for a certificate program at the University of New Haven.

Each certificate program is carefully designed as an introduction to a particular course of study. Later, students may choose to apply the credits they have earned toward an undergraduate degree.

Each program consists of a series of courses—or a total of 18 to 30 credit hours—in a specialized area. The university offers certificate programs in:

Business & Computers

Administrative Assistant Science
Computer Programming
Effective Presentation & Communication
Health Care Systems Management
Management Information Systems
Office Systems Management
Supervisory Management

Communication & Fine Arts

Graphic Design
Interior Design
Mass Communication
Photography

Legal Concerns

Law Enforcement Science
Paralegal Studies
Public Policy
Security Management

Professional Studies

Arson Investigation
Fire Prevention
Hazardous Materials
Industrial Fire Protection
Occupational Safety & Health
Professional Pilot

Hotel, Restaurant & Tourism

Hotel, Restaurant & Tourism Career Specializations
Bar Management
Casino Management
Club Management
Culinary Arts
Dietary Aide
Dietary Management
Executive Housekeeping Administration
Food Service Education
Hotel Management
Hotel & Restaurant Management
Institutional Food Service Administration
Restaurant Management
Tourism & Travel Administration

UNH in Southeastern Connecticut

Director: John F. O'Brien, M.B.A., University of New Haven

For over a decade, the University of New Haven has been providing both undergraduate and graduate educational opportunities for residents in the Groton/New London region. With the exception of some engineering laboratories, most of the courses required to complete a degree are offered in southeastern Connecticut.

At the undergraduate and graduate levels, there are credit and non-credit offerings in both business and engineering. Undergraduate programs include: accounting, business administration, management information systems, management science, operations management, personnel management, shipyard management, computer science, electrical engineering, industrial engineering, mechanical engineering and industrial technology with an emphasis in shipbuilding. At the graduate level, programs are offered in the areas of business, computer and information science, engineering psychology, public administration and industrial relations.

Certificate programs are also available on both levels. Senior professional certificate programs are offered for those students who already have an advanced degree. Students enrolling in these certificate programs may apply credit earned to an appropriate degree

program. Courses are scheduled often enough to enable students to complete certificate programs in a relatively short period of time.

In addition to classes open to the general public, UNH in Southeastern Connecticut offers several programs to the employees of local industries on company premises. These programs include credit courses, certificate programs, non-credit courses, and executive seminars. The UNH in Southeastern Connecticut staff periodically visit local business and industry representatives in order to inform them of university offerings that may be of interest to them.

Both undergraduate and graduate programs that are open to the public are offered at one convenient location in Groton. Courses are held primarily in the early evening, consistent with the schedules of an adult working population. Through agreements with several other colleges in the region, library facilities are made available to UNH students. A computer terminal facility is available to support programs. These terminals access the main academic system located at the main campus in West Haven. Students enrolled in computer-oriented courses are, therefore, afforded the same level of access as students enrolled in similar courses on-campus. More details on the university's computer facilities can be found elsewhere in this catalog.

Admission and registration requirements for all UNH in Southeastern Connecticut programs are consistent with those for main campus students. Acceptance into a degree program offered in southeastern Connecticut means that a student may enroll in the same program offered on the main campus. The university maintains an administrative office in Groton to assist students through the admissions and degree process. Faculty, professional staff and support personnel are assigned to the office on a full-time basis.

Servicemembers Opportunity Colleges

UNH in Southeastern Connecticut has been designated as an institutional member of Servicemembers Opportunity Colleges (SOC), a group of more than 400 colleges and universities providing voluntary post-secondary education to members of the military throughout the world. As an SOC member, UNH in Southeastern Connecticut recognizes the unique nature of the military lifestyle and has committed itself to easing the transfer of relevant course credits, providing flexible academic residency requirements, and crediting learning from appropriate military training and experiences. SOC has been developed jointly by educational representatives of each of the Armed Services, the Office of the Secretary of Defense and a consortium of thirteen leading national higher education associations; it is sponsored by the American Association of State Colleges and Universities (AASCU) and the American Association of Community and Junior Colleges (AACJC).

The Core Curriculum

In addition to department requirements, students must fulfill all requirements of the university core curriculum. See page 67 for information.

Division of Special Studies

Director: Molly B. Rudolph, M.A., University of New Haven

Specialized short-term classes and workshops are offered by the Division of Special Studies for undergraduate students, business and engineering professionals and for the area's public and private organizations. Special Studies students explore new directions, acquire and or advance professional skills and have the opportunity for short courses in personal enrichment as well as keeping in step with the latest computing and engineering technology.

Together with students, industry and the academic community, the Division of Special Studies develops a sequence of courses each year to meet current and future needs in the private and public sectors. The number of classes, four to twelve, in each area depends upon the time necessary to do justice to the topic or the regulations of accrediting associations as in the cases of real estate and insurance. A year's sequence of classes may include: computer, electroplating, professional engineering review, financial planning, real estate, insurance, certified nurses assistant training, wine tasting, food service management, supervisory management and communication skills.

Realizing the importance of computers in today's society, the division offers throughout each year a wide choice of introductory and advanced practical computer skills including hands-on experience with BASIC, LOTUS 1-2-3, dBase II, wordprocessing and MS/DOS. In addition, Computer Tutor gives one-to-one intensive private training on most software packages to meet specific needs.

All courses are staffed by university faculty members or by persons recognized as experts in the specific field. Special Studies classes carry CEUs (continuing education units), a nationally recognized measurement that documents the type, quality and time period involved in non-credit coursework. A CEU is equivalent to 10 contact hours of a given course in which the student has earned a grade of A, B, C, D or Pass. The CEUs are transferable in the same manner that credits make it possible to transfer degree work from one school to another. Special Studies courses are offered on the main campus in West Haven and at various off-campus locations throughout the state.

Professional Development Seminars

The Division of Special Studies also coordinates workshops, seminars, conferences and short-term institutes for undergraduate and graduate students and for area professionals. The professional development seminars offer the latest in technology, legislation and business practices. Since these offerings are not for credit, they are developed with a great deal of flexibility but always within the instructional excellence of the university. The variety available includes: the National Symposium for Occupational Safety and Health, annual fire science seminars, management development series which include time management, business writing, management skills for secretaries and administrative assistants, and leadership and motivation. The division also holds on-site seminars and programs at many companies and organizations around the state. The university awards continuing education units and certificates to individuals who complete any professional development seminar.

COURSES

Accounting*

A 101 Introduction to Financial Accounting
Opened only to non-accounting majors. Deals primarily with reporting the financial results of operations and financial position to investors, managers and other interested parties. Emphasizes the role of accounting information in decision making. 3 credit hours.

A 102 Introduction to Managerial Accounting
Prerequisite: A 101. This course is open only to non-accounting majors. The application of accounting in relation to current planning and control, evaluation of performances, special decisions, and long-range planning. Stress is on cost analysis. Additional topics include income tax planning, product costing and quantitative techniques. 3 credit hours.

A 111 Introductory Accounting I
This is a prerequisite to all other courses in accounting. A fundamental examination of the concepts, principles and procedures embodied in the financial accounting system. Emphasis will be placed upon the preparation of financial statements for service-rendering and merchandising business concerns through the application of financial accounting principles. 3 credit hours.

A 112 Introductory Accounting II
Prerequisite: A 111. An extension of the fundamental examination developed in A 111 to include the application of financial accounting principles to manufacturing business concerns. Additional emphasis will be placed upon an introduction to, and application of, managerial accounting principles for planning and controlling manufacturing operations. 3 credit hours.

*Note: Due to expanding use of computing capabilities, a computer use fee may be charged for any accounting course.

A 220 Intermediate Financial Accounting I
Prerequisite: A 112. A rigorous examination of financial accounting theory and practice applicable to the corporate form of business organization. With an emphasis upon reporting corporate financial status and results of operations, the course will include: the principles governing, and the procedures implementing, accounting valuations for revenue, expense, gain, loss, current assets and deferred charges. Throughout, reference is made to the relevant publications of professional accounting societies and associations. 3 credit hours.

A 221 Intermediate Financial Accounting II
Prerequisite: A 220. Continuing the emphasis upon corporate financial reporting established in A 220. The principles and procedures applicable to accounting valuations for current liabilities, long-term liabilities, deferred credits and stockholders equity are examined. Special attention is directed to preparing the statement of changes in financial position.

A 222 Intermediate Financial Accounting III
Prerequisite: A 221. Advanced topics include income tax allocation, pensions and leases, accounting changes, price level changes, installment sales and consignments. Throughout, reference is made to the relevant publications of professional accounting societies and associations. 3 credit hours.

A 223 Cost Accounting I
Prerequisite: A 112. An in-depth examination of the financial accounting principles and procedures underlying the determination and reporting of product costs for manufacturing concerns. Emphasis is placed upon the concepts and classifications of product costs (direct material, direct labor and manufacturing overhead), as well as the recording and accumulating of such costs within job order and process cost accounting systems. 3 credit hours.

A 224 Cost Accounting II
Prerequisite: A 223. A continuation of the emphasis on product-cost determination established in A 223, integrated with an examination of accounting systems for managerial planning and control. Topics include budgeting, standard costs, variance analysis, direct costing, cost-volume-profit analysis and joint and by-product costing. 3 credit hours.

A 225 Advanced Managerial Accounting
Prerequisite: A 224. A comprehensive analysis of the uses and behavioral implications of managerial accounting information. Emphasis will be placed upon the economic and motivational impact of internal accounting information for planning and controlling operations. Topics include budgets (capital and operating), performance reports, responsibility accounting (cost, profit and investment centers), transfer-pricing, performance measurement, contribution reporting, pricing methods and relevant costs of decision making. 3 credit hours.

A 240 Financial Statement Analysis
Prequisites: A 220, A 221, A 222. The tools and techniques of analyzing financial statements on the part of investors, creditors, and corporate financial management will be examined. Implications of portfolio theory and impact of different accounting standards will be integrated throughout the course. 3 credit hours.

A 331 Advanced Financial Accounting I
Prerequisite: A 222. A concentrated examination of financial accounting concepts and the principles and procedures applicable to partnership and consolidation accounting. Partnership topics include: formation and division of income, changes in ownership and liquidation. Consolidation topics include comprehensive coverage of the cost and equity methods, as well as other issues (purchase versus pooling of interests, entity theory, etc.) related to consolidation accounting. Other financial accounting topics of a specialized nature not previously covered may be included at the discretion of the instructor. 3 credit hours.

A 332 Advanced Financial Accounting II
Prerequisite: A 222. An examination and evaluation of the literature generated by authoritative financial accounting boards to determine its effect on the structure of financial accounting theory, its impact on financial accounting practice and its implications for the future role of the accountant. Extensive use is made of the publications of professional accounting societies and accounting associations. 3 credit hours.

A 333 Auditing and Reporting Principles
Prerequisite: A 222. A general examination of the role and function of the independent auditor in the performance of the attest function. Emphasis will be placed on current auditing pronouncements, the audit report, statistical sampling, evaluation of internal control and the determination of the scope of an audit. Rules and standards of compilation and review reports are presented. 3 credit hours.

A 334 Auditing Procedures
Prerequisite: A 333. An examination and evaluation of the detailed procedures associated with auditing accounts related to a firm's financial position, changes in financial position and operating results. An evaluation and documentation of internal control procedures will be an integral aspect of the evaluation of the fairness of accounting balances. A practice audit case will be used to develop an appreciation for the application of auditing techniques. 3 credit hours.

A 335 Federal Income Taxation I
Prerequisite: A 112. An introduction to the federal income tax law including history, economic and social aspects, sources of tax law and administration. Course coverage will be devoted primarily to individual taxation, including determination of gross income, deductions, exemptions, filing status and alternative methods of tax computation. 3 credit hours.

A 336 Federal Income Taxation II
Prerequisite: A 335. A continuation of A 335 including coverage of property transactions, capital gains and losses, non-taxable exchanges, tax accounting methods and elections, tax periods and special tax computations. Also an introduction to corporate taxation, organization, operation, distributions accumulations and liquidation. 3 credit hours.

A 337 Federal Income Taxation III
Prerequisites: A 335, A 336. A continuation of A 336 including taxation of S Corporations, partnerships, federal estates and gifts and certain state transfer taxes. Also the income taxation of trusts and estates and tax administration and research. 3 credit hours.

A 350 Accounting Information Systems
Prerequisite: A 221. This course provides a thorough introduction to basic systems theory, a firm working knowledge of systems analysis and design techniques and an exposure to the several fundamental accounting information systems inherent in most business firms. Emphasis is on EDP environments. 3 credit hours.

Art

AT 101-102 Introduction to Studio Art
Foundation study in the visual arts designed to heighten the student's aesthetic awareness and to provide an introduction to the study of drawing, painting and design using a variety of materials. 3 credit hours.

AT 105 Basic Drawing I
A basic foundation course which includes a disciplined study in the fundamentals of drawing such as nature studies, perspective, exercises in coordination of hand and eye. 3 credit hours.

AT 106 Basic Drawing II
A continuation of AT 105 with emphasis on perspective and depiction of three-dimensional space and form by two-dimensional means. Study of architectural forms, natural objects and landscape. 3 credit hours.

AT 122 Graphic Design Production
Prerequisite: AT 100 level course, or consent of the instructor. Studio introduction to the technical skills of graphic design including: copyfitting, type specification, typesetting, layout and mechanical preparation

COURSES

AT201 Painting I
Problems in pictorial composition involving manipulation of form and color. Various techniques of applying pigment will be explored as well as mixing pigments, stretching and priming canvases. 3 credit hours.

AT202 Painting II
A continuation of AT201 with further exploration of two-dimensional pictorial arrangements of form and color for greatest visual effectiveness. Students will be encouraged to develop their own personal idiom in the medium. 3 credit hours.

AT203 Graphic Design I
Prerequisites: AT122; AT312; AT221 or AT222 or consent of instructor. Exploration of graphic design problems emphasizing integration of form development with content application. Intended to develop student's ability to communicate ideas and feelings effectively through visual means.

AT204 Graphic Design II
Prerequisite: AT203 or consent of the instructor. A continuation of AT203 with emphasis on the application of design principles to actual job situations from the original concept to the mechanical. 3 credit hours.

AT205 Ceramics I
Introduction to clay as an expressive medium. Hand-built and wheel-thrown methods with various glazing and decorative techniques. Stacking and firing kilns. An exploration of three-dimensional form. Good for engineers. Laboratory Fee. 3 credit hours.

AT206 Ceramics II
Continuation of AT205 with free exploration of novel and experimental approaches to the medium. Laboratory Fee. 3 credit hours.

AT211 Basic Design I
A basic foundation course includes exploration of two-dimensional visual elements—line, color, light and dark, shape, size, placement, and figure-ground, and their effective use. A basic course for those wishing basic art understanding. 3 credit hours.

AT212 Basic Design II
A continuation of AT211, with concentration on three-dimensional elements of design including positive and negative volumes, surfaces, structural systems, etc., employing a variety of materials. 3 credit hours.

AT213 Color
An intensive exploration of color perception and interaction with manipulation of form and color for greatest effectiveness in pictorial compositions. 3 credit hours.

AT216 Architectural Drawing
Prerequisite: AT105. Drawing as applied to architectural problems. Drafting, drawing conventions, presentations, graphic symbols, line quality and context, and free hand drawing. 3 credit hours.

AT221 Typography I
Prerequisites: AT122; AT211; AT312 or instructor's consent. Studio course examining how type is used in the creation of visual design. The student will gain an understanding of the relationships of language, type and design in the communication of ideas by means of printed material.

AT222 Typography II
Prerequisite: AT221 or instructor's consent. A continuation of Typography I with emphasis on practical applications of typographical skills already acquired.

AT231 History of Art I
Western Art from cave art through the Middle Ages to Gothic. This course seeks to understand expressive, social, cultural, political and economic aspects of the cultures in which specific art styles and visual developments emerged. This course forms the basic vocabulary for History of Art II. Includes economic and technological changes in the societies and their reflections in art. Appropriate for business and engineering students. 3 credit hours.

AT232 History of Art II
Western Art from the Renaissance to the twentieth century in Europe and America; a continuation of AT231. 3 credit hours.

AT233 History of Architecture and Interior Design
A survey of developments in the decorative arts from antiquity to the present day. Special consideration of the aesthetic and practical relationships of architectural space to interior decor. For the major and those interested in home decoration. 3 credit hours.

AT302 Figure Drawing
Prerequisite: AT105 or consent of the instructor. Study of drawing which concentrates on the human figure. 3 credit hours.

AT304 Sculpture I
The exploration of three-dimensional materials for maximum effectiveness in expressive design. Experimentation with clay, plaster, wood, stone, canvas, wire screening, metal, found objects. A basic understanding of major, fundamental methods: casting and carving. Laboratory Fee. 3 credit hours.

AT305 Sculpture II
A continuation of AT304 with further exploration of three-dimensional materials and the possibilities they present for creative visual statements. Laboratory Fee. 3 credit hours.

AT309 Photographic Design
Prerequisite: AT313 or AT314. Introduction to basic materials and techniques of black and white photography used in graphic design. The image as it relates to type and other art work, including posters, advertisements, manuals, etc. Laboratory Fee. 3 credit hours.

AT313-314 Photography I and II
Introduction to basic techniques, materials and aesthetic aspects of black and white photography. Laboratory course with emphasis on the individual student's image making. Photography II gives special attention to problems dealing with images in groups, series and sequences. New techniques and technical demonstrations. Laboratory Fee. 3 credit hours each.

AT315 Printmaking
The expressive potential of the graphic image through the techniques of silkscreen, wood cut, wood engraving, linoleum blockprint, collotype, monotype and photo-silkscreening. Problems in black-and-white and color. Laboratory Fee. 3 credit hours.

AT317 Interior Design
Prerequisites: AT211 or AT212; AT233 or instructor's consent. A basic studio course with exploration of interior design problems and their relationship to architecture. Special emphasis on exploitation of space, form, color and textures for greatest effectiveness. 3 credit hours.

AT319 Textile Design
Prerequisites: AT104; AT211 or AT212 or instructor's consent. Studio course in design of fabrics. Study of various fibers and their characteristics for practical application in fashion and interior design. Laboratory Fee. 3 credit hours.

AT322 Illustration
A solid foundation in the techniques of creative illustration. Various media and their expressive possibilities will be studied; charcoal, pencil, pen and ink, wash, colored pencils, acrylic. Focuses on application of these techniques. 3 credit hours.

AT330 Film Animation
The basic techniques and concepts of film animation as used in cartooning, titling, advertising and fine art. Students will work individually or in groups on their own animation projects. 3 credit hours.

AT331 Contemporary Art
Focusing on art since 1945. The development of the present stems from ideas emanating from the 1870s—especially Impressionism; this course seeks to understand these connections. Emphasis on economic historical and technological developments. Appropriate for business, communication, history and engineering students. 3 credit hours.

AT333 Survey of Afro-American Art
Black art in the United States from the Colonial period to the present. Consideration of African cultural influences. Analysis of modern trends in Black art. 3 credit hours.

AT401 Studio Seminar I
Prerequisites: AT101-102, AT 201, AT302 or AT313, and art electives. Drawing on developments through their previous study, students will concentrate on major projects in the areas of their choice. 1-4 credit hours.

AT402 Studio Seminar II
Prerequisite: AT401. Continuation of Studio Seminar I. 1-4 credit hours.

AT403-412 Topics in the Visual Arts
Variable credit.

AT599 Independent Study
Prerequisites: consent of the instructor and chairman of department. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

Aviation

Flight training costs are based on rates at university-approved flight training schools. This cost is not included in the university tuition charges and should be paid directly to the flight school.

An asterisk (*) indicates flight training courses which may be completed at any of the university-approved flight training schools in Connecticut. The student must register for these courses at the university in order to receive credit and be eligible for related aviation degree programs.

AE100 Aviation Science—Private
Basic ground instruction in aircraft systems and controls. FAA regulations, air traffic control, communication, weight and balance, meteorology, navigation, radio facilities and utilization, flight computer and aerodynamic theory. Successful completion of FAA Private Pilot airplane written examination is required. 3 credit hours.

***AE105 Primary Flight—Solo**
Corequisite: AE100. Introduction to flight. Concentration on the development of flying skills for solo flight. Course includes ground instruction required for each flight lesson. Minimum flight time requirements: dual instruction—10 hours; ground trainer—20 hours; solo—3 hours; discussion—4 hours. Laboratory Fee. 1 credit hour.

AE110 Aviation Meteorology
Discussion and interpretation of atmospheric phenomena including an analysis of aviation forecasts and reports. 3 credit hours.

COURSES

***AE115 Private Pilot Flight**
Prerequisite: AE105. Flight training in preparation for private pilot certification. This course includes solo practice of maneuvers to increase proficiency, cross country flying, and flight test preparation. Private pilot certification is required. Minimum flight time requirements: dual instruction—12 hours; solo—13 hours; discussion—8 hours. Laboratory Fee. 2 credit hours.

AE120 Foundations of Aviation
A study of the development of aviation from the first efforts to fly through the present. The social and economic impact of aviation on society will be explored. 3 credit hours.

AE130 Aviation Science—Commercial
Prerequisite: AE100. Advanced ground instruction in navigation, flight computer, radio navigation, aircraft performance, engine operation, aviation physiology and FAA regulations including FAR Parts 121 and 135. Successful completion of FAA. Commercial Pilot airplane written examination is required. 3 credit hours.

***AE135 Commercial Flight I**
Prerequisite: AE115. Continuation of flight instruction and practice for the purpose of developing a high degree of judgment and coordination through practice of advanced maneuvers and cross country flights. Minimum flight time requirements; dual instruction—23 hours; solo—40 hours; ground instruction—8 hours. Laboratory Fee. 2 credit hours.

AE140 Concepts of Aerodynamics
The study of basic aerodynamics including theory of flight, analysis of the four forces, high lift devices, subsonic, transonic and supersonic flight. 3 credit hours.

***AE145 Commercial Flight II**
Prerequisite: AE135. Introduction to basic instrument flying and transition into high performance complex single engine aircraft. Additional cross country and night flying practice. Minimum flight time requirements: dual instruction—22 hours; solo—16.2; ground trainer or aircraft (instrument)—7 hours; ground instruction—8 hours. Laboratory Fee. 2 credit hours.

AE200 Aviation Science—Instrument
Prerequisite: AE130. Ground instruction in preparation for the FAA Instrument Rating. Study includes a discussion of pertinent regulations, IFR departure, enroute, and arrival procedures, flight planning, instrument approaches, air traffic control procedures and a review of meteorology. Successful completion of FAA Instrument-Airplane written examination is required. 3 credit hours.

***AE205 Commercial Flight III**
Prerequisite: AE145. Instrument instruction involving navigation, enroute, holding, and approach procedures. At the completion of this course the student will be qualified for commercial pilot certification as well as instrument pilot rating certification. Commercial and instrument pilot certification is required. Minimum flight time requirements: dual instruction—22 hours; solo—21 hours; ground trainer—3 hours; ground instruction—8 hours. Laboratory Fee. 2 credit hours.

AE210 Aircraft Powerplants, Systems and Components
Prerequisite: AE100. Discussion of the fundamentals of design and performance of aircraft engines including methods of construction, lubrication, carburetion, engine operating procedures and control. In addition, the theory of operation and analysis of problems associated with aircraft components and systems, involving reciprocating and jet aircraft. 3 credit hours.

AE230 Flight Instructor Seminar
Prerequisite: AE200. Discussion of the fundamentals of instruction with specific emphasis on teaching as related to the flight instructor. Detailed study and analysis of maneuvers and topics required of the flight instructor. In addition, emphasis will be placed on practice teaching. Successful completion of FAA written examinations (Flight Instructor Airplane and Fundamentals of Instructing) is required. 3 credit hours.

***AE235 Instructor Flight**
Prerequisite: AE205. Flight instruction flight training in preparation for the FAA Practical Flight Test. Concentration on communication and analysis of maneuvers and procedures. Minimum flight time requirements; dual instruction—15 hours; solo—5 hours; ground instruction—5 hours. Laboratory Fee. 1 credit hour.

***AE245 Multi-Engine Rating**
Prerequisite: AE205. Prepares the commercial pilot for the FAA Multi-Engine Rating. Includes discussion of principles of multi-engine flight as well as flight training required for the rating. Multi-engine certification is required. Minimum flight time requirements: dual instruction—approximately 10 hours; ground instruction — approximately 10 hours. 1 credit hour.

AE310 Air Transportation Management
Prerequisite: senior standing or academic adviser's approval. Discussion of air commerce related to the transportation system. This course includes a study of commercial airlines and fixed-base operations. 3 credit hours.

AE400 Airport Management
Prerequisite: senior standing or academic adviser's approval. Discussion and study of operational functions of airports, general aviation operations, terminal building utilization, support facilities, public relations and airport financing as related to the airport manager. 3 credit hours.

AE 410 Corporate Aviation Management
Prerequisite: senior standing or approval of academic adviser. Discussion and study of the importance of air transportation to the corporation; operational structure and concepts; cost analysis and budget techniques; aircraft analysis; personnel selection and management; aircraft maintenance; training; and scheduling. 3 credit hours.

AE 599 Independent Study
Prerequisite: Consent of the program director. Opportunity for the student, under direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 3 credit hours.

Biology and Environmental Science

Biology courses marked with an asterisk (*) are usually scheduled every other academic year. Courses marked with a dagger (†) may be offered at the discretion of the department.

BI 115 Nutrition and Dietetics
The various nutrients, their food sources and the interaction between these nutrients and the body. Nutrition as related to disease. Energy production, weight-loss, weight-gain and normal diets. 3 credit hours.

BI 116 Fundamentals of Food Science
Various methods of food processing, preservation and storage. Sanitation, spoilage and deterioration of foods. Food additives and contaminants. Federal regulatory agencies and food evaluation. 3 credit hours.

BI 121-122 General and Human Biology with Laboratory I and II
An introduction to the study of biology which integrates biological principles and human biology. Major topics covered are biochemistry, cell and molecular biology, genetics, anatomy and physiology, behavior, ecology and evolution. The laboratory involves experimentation and demonstration of principles covered in lecture. BI 121 is a prerequisite for BI 122. Laboratory Fee. 4 credit hours each semester.

†BI 125 Evolution
Discussion of the processes responsible for the origin and evolution of life on earth including human beings. 3 credit hours.

***BI 141 Human Ecology**
Understanding human involvement in and alteration of ecosystems through overpopulation, use of resources and pollution. Consideration of economic, cultural and behavioral factors. 3 credit hours.

†BI 151 Animal Behavior
Comparative studies of behavioral patterns of animals. The functional bases for behavioral patterns such as territoriality, reproduction, feeding, migration. Relation of behavior to ecology, evolution, genetics and physiology. 3 credit hours.

†BI 253-254 Biology for Science Majors with Laboratory I and II
A discussion of the principles of biological organization from the molecular level through the ecological. The basic course for biology and environmental studies majors. Laboratory Fee. 4 credit hours each semester.

***BI 301 Microbiology with Laboratory**
Prerequisites: BI 121 or BI 253 and one college course in general chemistry. A history of microbiology and a survey of microbial life. Includes viruses, rickettsia, bacteria, blue-green algae and fungi; their environment, growth, reproduction, metabolism and relationship to man. Laboratory Fee. 4 credit hours.

†BI 302 Bacteriology with Laboratory
Prerequisites: BI 121 or BI 253 and one college course in general chemistry. Theoretical and laboratory study of the morphology, physiology and classification of bacteria. The application of these facts to agriculture, industry, sanitation, public health and disease. Laboratory Fee. 4 credit hours.

***BI 303 Histology with Laboratory**
Prerequisite: BI 121 or BI 253. Microscopic and chemical structure of normal organs and tissues and their cell constituents as related to function. Microscopic observations, tissue staining and slide preparation. Laboratory Fee. 4 credit hours.

***BI 304 Immunology with Laboratory**
Prerequisites: BI 121 or BI 253 and one college course in general chemistry. The nature of antigens and antibodies, formation and action of the latter, other immunologically active components of blood and tissues and various immune reactions. Laboratory Fee. 4 credit hours.

***BI 305 Developmental Biology with Laboratory**
Prerequisite: BI 122 or BI 254. Origin and development of tissues, organs and organ systems during the embryonic and post embryonic stages. In the laboratory, the chick is grown and studied at various stages. Laboratory Fee. 4 credit hours.

***BI 308 Cell Physiology with Laboratory**
Prerequisites: BI 121 or BI 253, one college course in general chemistry and one college course in general physics. Basic theories of physiology as applied to plants and animals. Practical aspects and experimental techniques studied in the laboratory. Laboratory Fee. 4 credit hours.

COURSES

***BI310 Vertebrate Anatomy and Physiology with Laboratory**
Prerequisites: BI121/122 or BI253/254. Structure and function of vertebrate organ systems with an emphasis on human systems. Laboratory Fee. 4 credit hours.

***BI311 Genetics**
Prerequisite: BI121 or BI253. A survey of modern genetics with an emphasis on classical, human and molecular genetics. Laboratory exercises complement lecture material. Laboratory Fee. 4 credit hours.

***BI315 Nutrition and Disease**
Prerequisites: BI115 and either BI122 or BI254. Aspects of diet in treating and preventing various symptoms and syndromes, diseases, inherited errors of metabolism and physiological stress conditions. 3 credit hours.

***BI320 Forensic Medicine**
Prerequisites: BI122 or BI253, CH116, CJ215. Introduction to the medical-legal aspects of medicine emphasizing the relationship of the natural sciences. Injuries from various causes, effects of poisons, sex-offenses, autopsies and estimation of time of death will be covered. History of forensic medicine, its limitations and progress, odontology, malpractice and organ transplants will be discussed. 3 credit hours.

***BI330 General Ecology with Laboratory**
Prerequisite: BI122 or BI254. The interactions of living organisms, including man, with each other and with their environment. Discussion of population regulation, community structure, geochemistry and energetics. Laboratory Fee. 4 credit hours.

***BI421 Toxicology with Laboratory**
Prerequisite: BI122 or CH202. The effects of toxicants on living organisms. Mechanisms of action, absorption, distribution, excretion and metabolism. Methods of toxicologic evaluation. 3 credit hours.

†BI433 Medical Microbiology with Laboratory
Prerequisites: BI301 or BI302, CH115. A study of the more common diseases caused by bacteria, fungi and viruses, including their etiology, transmission, laboratory diagnosis and control. Laboratory Fee. 4 credit hours.

***BI461-462 Biochemistry I and II with Laboratory**
Prerequisites: CH201, CH202, CH203 and CH204. A survey of biochemistry including a discussion of pH, buffers, water, bioenergetics, oxidative phosphorylation, enzymology, metabolic regulation, and the structure, function and metabolism of carbohydrates, proteins, lipids, nucleic acids, vitamins and cofactors. Laboratory exercises are primarily designed to concentrate on various experimental techniques including electrophoresis, chromatography, spectrophotometry, centrifugation and enzymology. Laboratory Fee. 8 credit hours.

***BI502 Fresh Water and Marine Ecology**
Prerequisite: BI220. The ecology of lakes, rivers, estuaries and the oceans. Laboratory involves extensive field work. Laboratory Fee. 4 credit hours.

***BI510 Environmental Health**
Prerequisites: BI310 and CH110. The emphasis is on the health effects of environmental and occupational pollutants and on the spread and control of communicable diseases. Toxicological and epidemiological techniques are discussed. 3 credit hours.

†BI517-518 Biotechniques with Laboratory
Prerequisites: BI253, CH115, junior or senior status biology or chemistry major. The theory and practice of research techniques used in the biological sciences. Laboratory Fee. 8 credit hours.

***BI519 Pharmacology with Laboratory**
Prerequisites: BI122 or BI361 or CH302. Science of medicinals and other chemicals and their effects produced by use and abuse on living organisms, and the mechanisms whereby these effects are produced. Relation of structure to activity, methods of assay and metabolic pathways involved. Laboratory Fee. 4 credit hours.

†BI524 Psychobiology
Prerequisites: PY111, BI122, CH116. A study of the biological factors of behavior, with concepts drawn from numerous related disciplines such as physiology, pharmacology, ethnology, ecology, anthropology, psychology and biochemistry. 3 credit hours.

†BI561-562 Advanced Biochemistry
Prerequisite: BI362. An in-depth discussion of current topics in biochemistry and molecular biology. 6 credit hours.

BI590 Special Topics in Biology/Science
A course designed to discuss topics in biology or science which are of special or current interest. 1 to 4 credit hours.

BI591-592 Seminar
Prerequisite: biology major in junior or senior year. Meetings are held one hour weekly during which a research paper is reviewed by a member of the class. Each student, with his adviser, must select an article in a biological periodical from which is developed a 20-minute discourse on its content. 2 credit hours.

BI595-596 Laboratory Research
Prerequisites: biology major, consent of the department. Choice of a research topic, literature search, planning of experiments, experimentation and correlation of results in a written report, under the guidance of a department faculty member. Three hours of work per week required per credit hour. Laboratory Fee. 1-6 credit hours.

BI 599 Independent Study
Prerequisites: biology major, consent of the department. Weekly conferences with adviser. Three hours of work per week required per credit hour. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. A written report of the work carried out is required. 1-3 credit hours, maximum of 6.

Business Law

LA 101 Business Law I
Introductory overview of the development of common, statutory and constitutional law and the underlying social and economic policies thereof. The nature, functions and limitations of law and the legal system in the resolution of a controversy as it relates to business activity with particular attention to contract law. 3 credit hours. For non-accounting or non-finance majors.

LA 111 Business Law I
Law of contracts, negotiable instruments, sales, insurance. Particular attention will be devoted to applicable provisions of the Uniform Commercial Code. 3 credit hours.

LA 112 Business Law II
Prerequisite: LA111. Law of agency, employer/employee, partnerships, corporations, security and governmental regulation, real and personal property law, creditors rights and bankruptcy, wills and trusts. 3 credit hours.

Chemistry

The chemistry courses marked with an asterisk (*) may, at times, be scheduled in the evening. Chemistry courses marked with a dagger (†) are offered at the discretion of the department.

CH 103 Introduction to General Chemistry
An introductory course for students without a high school chemistry background. The course deals with inorganic chemistry, elements, compounds, balancing equations, stoichiometry, nomenclature, chemical bonding, the periodic table, and solutions. CH 104 is taken concurrently with CH 103. 3 credit hours.

CH 104 Introduction to General Chemistry Laboratory
To be taken with CH 103. Experiments include the measurement of physical properties, determination of percentage of composition and chemical formulas, reactions of representative elements, ionic reactions and the quantitation of acids and bases. Laboratory Fee. 1 credit hour.

***CH 107 Elementary Organic Chemistry**
Prerequisite: CH 103, CH 104 or CH 115, CH 117 or consent of the department. A one-semester introduction to one of the major fields of chemistry designed for students not majoring in chemistry. Nomenclature, structure and the principal reactions of aliphatic and aromatic organic chemistry will be studied. 3 credit hours.

***CH 108 Elementary Organic Chemistry Laboratory**
Prerequisite: CH 103, CH 104 or CH 115, CH 117 or consent of the instructor. A laboratory course designed to accompany CH 107. The principal operations of organic synthesis such as refluxing, distillation, filtration and crystallization, are studied and applied in a number of simple preparations. Laboratory Fee. 1 credit hour.

†CH 109 Consumer Chemistry
Prerequisite: CH 103 or consent of the instructor. This is a general course dealing with the physical and chemical properties of substances used daily such as paints, plastics, cosmetics, vitamins, antibiotics, hormones and poisonous substances. 3 credit hours.

***CH 110 Environmental Chemistry**
Prerequisite: CH 115, CH 117 or consent of the instructor. A survey of the principal environmental contaminants and pollutants of air and water, including heavy metals, radioactive particles, insecticides, detergents and others. Chemistry sufficient to understand the properties of these materials and possible routes to their control will be introduced. 3 credit hours.

CH 115 General Chemistry I
Prerequisite: CH 103 or one unit of high school chemistry or written qualifying exam. Brief review of fundamentals including stoichiometry and chemical bonding. Thermochemistry, electrochemistry, nuclear chemistry, gases, and introduction to inorganic chemistry and coordination compounds. CH 117 is taken concurrently with CH 115. 3 credit hours.

CH 116 General Chemistry II
Prerequisites: CH 115, CH 117. Rates of chemical reactions; chemical equilibria including pH, acid-base, common ion effect, buffers, and solubility products; thermodynamics; an introduction to organic and biochemistry. CH 118 is taken concurrently with CH 116. 3 credit hours.

CH 117 General Chemistry I Laboratory
To be taken with CH 115. Experiments include stoichiometry and basic physical chemistry experiments in thermochemistry and electrochemistry. Oxidation-reduction reactions, corrosion chemistry, and coordination chemistry. Laboratory Fee. 1 credit hour.

CH 118 General Chemistry II Laboratory
To be taken with CH 116. Experiments include the quantitative measurement of chemical rates and ionic equilibrium constants. The common ion effect, pH and buffers are investigated. The course concludes with an organic synthesis. Laboratory Fee. 1 credit hour.

COURSES

†CH120 Chemistry of Addicting and Hallucinogenic Drugs
Prerequisite: CH103 or consent of the instructor. The properties, dosages, preparation and reactions of the addicting and hallucinogenic drugs. Alcohol, caffeine, nicotine, sedatives, stimulants, tranquilizers, LSD, mescaline, cannabis, narcotics and antidepressants. 3 credit hours.

CH201-202 Organic Chemistry I and II
Prerequisite: CH116, CH118. The common reactions of aliphatic and aromatic chemistry with emphasis on functional groups and reaction mechanisms. CH203 and CH204 are taken concurrently with CH201-202. 6 credit hours.

CH203-204 Organic Chemistry I and II Laboratory
To be taken with CH201-202. The techniques, reactions, and syntheses commonly employed in the organic chemistry laboratory are covered. Laboratory Fee. 2 credit hours.

***CH211 Quantitative Analysis with Laboratory**
Prerequisites: CH116, CH118. Theory and laboratory training in the preparation of solutions, volumetric, gravimetric, and spectrophotometric methods of analysis. Analysis of ores and ion-exchange chromatography. Laboratory Fee. 4 credit hours.

***CH221 Instrumental Methods of Analysis with Laboratory**
Prerequisites: CH211, CH201, CH203. The theory of various instrumental methods, including visible, ultraviolet and infrared spectroscopy, gas chromatography, potentiometry, mass spectrometry and nuclear magnetic resonance spectroscopy. Laboratory identification of compounds by the methods discussed in the lectures. Laboratory Fee. 4 credit hours.

†CH321-322 Plastics and Polymer Chemistry I and II
Prerequisites: CH116, CH118, CH202, CH204. All phases of the plastics and polymers field, including the chemistry involved, methods of production, physical properties and the uses of specific polymers. 6 credit hours.

***CH331-332 Physical Chemistry I and II with Laboratory**
Prerequisites: CH116, PH205, M203 (may be taken concurrently). Kinetic theory of gases, thermodynamics, phase equilibria, transport and surface phenomena, kinetics, quantum mechanics, atomic and molecular spectroscopy. Appropriate laboratory experiments are performed for each major topic. Laboratory Fee. 8 credit hours.

***CH351 Qualitative Organic Analysis with Laboratory**
Prerequisite: CH202, CH204, CH221. A one-semester laboratory course dealing with the systematic identification of organic compounds. Specific methods include wet analysis, derivatization, and physical analysis such as refractometry and molecular spectroscopy. Laboratory Fee. 4 credit hours.

CH411 Seminar I
Prerequisites: CH202, CH204, CH332. Acquaints the student with the chemical literature and its use. Assignments include library searches and the presentation of a short seminar on a special topic approved by the faculty. 1 credit hour.

CH412 Seminar II
Prerequisite: CH411. The student researches a specific current topic in chemical research or applied chemistry and presents a term paper and a formal full-length seminar to the faculty and students. 1 credit hour.

†CH441 Analytical Chemistry with Laboratory
Prerequisite: CH221. Corequisite: CH332. Application of instrumental methods to inorganic and organic methods of analysis not covered in CH221, including mass, ultraviolet and infrared spectrophotometry, chromatography and electrochemical analysis. Application of on-line digital computers to chemical analysis. 4 credit hours.

CH451 Thesis
Prerequisites: CH202, CH204, CH211, CH221, CH332. An original investigation in the laboratory or library under the guidance of a member of the department. A final thesis report is submitted. Laboratory Fee. 2 credit hours.

CH471 Industrial Chemistry
Prerequisites: CH202, CH211, CH221, CH332. A course to bridge the gap from the academic to the industrial world. Topics include material accounting, energy accounting, chemical transport, reactor design, process development and control. 3 credit hours.

***CH501 Advanced Organic Chemistry I**
Prerequisites: CH202, CH204. This course deals with topics such as chemical bonding and molecular structure, investigation of mechanism, nucleophilic substitution, electrophilic aromatic substitution, eliminations, symmetry controlled reactions, and Hammett plots. 3 credit hours.

***CH502 Advanced Organic Chemistry II**
Prerequisites: CH202, CH204. The course deals primarily with synthetic organic chemistry and includes oxidation, reduction, alkylation, addition, substitution, and multistep syntheses. 3 credit hours.

***CH521 Advanced Inorganic Chemistry I**
Prerequisite: CH331. Corequisite: CH332. The chemistry of coordination compounds: molecular and electronic structures, stereochemistry, valence bond, ligand field, and molecular orbital theories, thermal and photochemical reactions and mechanisms. 3 credit hours.

***CH522 Advanced Inorganic Chemistry II**
Prerequisite: CH331. Corequisite: CH332. The chemistry of the main group elements, lanthanides, and actinides: bonding, structure and properties, synthesis, acid-base theories, crystal structures, cage and cluster compounds. 3 credit hours.

CH523-524 Advanced Inorganic Chemistry I and II Laboratory
Corequisites: CH521, CH522. Experiments are performed in conjunction with material presented in CH521 and CH522. Included are inorganic syntheses, resolution of diastereomers, conductance measurements, determination and interpretation of infrared, ultraviolet, mass, and nuclear magnetic resonance spectra of inorganic compounds, and photochemistry. Laboratory Fee. 2 credit hours.

†CH533 Advanced Physical Chemistry
Prerequisite: CH332. Emphasis on the fundamentals of quantum mechanics, statistical mechanics, molecular bonding theory and spectroscopy. 3 credit hours.

†CH561 Chemical Spectroscopy
Prerequisite: CH332. Introduction to the elementary theory with emphasis on techniques and interpretation of data obtained in applications of infrared, Raman, visible, ultraviolet, nuclear quadrupole, electron spin and nuclear magnetic resonance spectroscopy to the solution of chemical problems. 3 credit hours.

CH599 Independent Study
Prerequisite: instructor's consent. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course may be used to do preliminary work on the topic studied for Thesis (CH451). 1-3 credit hours.

Chemical Engineering

CM201 Fundamentals of Chemical Engineering I
Prerequisites: CH116, MH17, PH150. An introduction to the profession of chemical engineering and the application of fundamental chemical, physical, and mathematical concepts to the solution of chemical engineering problems. Material balances and principles of stoichiometry are used to solve problems encountered in the field. 3 credit hours.

CM202 Fundamentals of Chemical Engineering II
Prerequisite: CM201. A continuation of CM201 with emphasis on the use of energy balances for both non-reactive and reactive processes. Combined material and energy balances are used in solving a variety of chemical engineering problems. 3 credit hours.

CM311 Chemical Engineering Thermodynamics
Prerequisite: CH331 or ME301. Applications of the first and second laws of thermodynamics to batch and flow processes important in chemical engineering for homogeneous and heterogeneous systems, mixtures and pure materials. Topics include phase and chemical equilibria, chemical reactions, thermochemistry, thermodynamic properties, miscibility, potential functions, molecular theory, and statistical thermodynamics. 3 credit hours.

CM321 Reaction Kinetics and Reactor Design
Prerequisites: CM311, M204. Homogeneous and heterogeneous catalyzed and non-catalyzed reaction kinetics for flow and batch chemical reactors. Application of kinetic data to both isothermal and nonisothermal reactor design. This course is intended for both chemists and chemical engineers. 3 credit hours.

CM401 Mass Transfer Operations
Prerequisites: CM311, ME404, ME421. Fundamentals of mass transfer and diffusion applied to distillation, extraction, gas absorption, humidification, drying, and other unit operations. Theory and application of phase equilibria and stage operations for binary and multicomponent systems. Use of equilibrium stage and transfer unit concepts in design of mass transfer processes. 3 credit hours.

CM411 Chemical Engineering Laboratory
Prerequisites: ME404, ME421; Corequisite: CM401. Laboratory experiments in fluid flow, heat and mass transfer, and chemical engineering unit operations. Interpretation and correlation of laboratory data and report writing are emphasized. 2 credit hours.

CM421 Plant and Process Design
Prerequisites: CM401, IE204 and senior standing. Design of chemical plants and process equipment applying the principles of unit operations and processes, thermodynamics, kinetics, and economics. Emphasis is placed on process flow sheet development, equipment selection, process operating conditions, cost estimation, economic analysis, design strategy and optimization. 4 credit hours.

COURSES

CM431 Process Dynamics and Control
Prerequisites: EE211, M204. Fundamental principles of chemical process dynamics used in the measurement and control of process variables such as temperature, pressure, and flow rate. Linear and non-linear control theory and stability analysis techniques such as root locus and frequency response are presented. 3 credit hours.

Civil Engineering

CE201 Statics
Prerequisites: PH150, M118 (may be taken concurrently). Composition and resolution of forces in two and three dimensions. Equilibrium of forces in stationary systems. Analysis of trusses. Centroids and second moments of areas, distributed forces and friction. 3 credit hours.

CE202 Strength of Materials I
Prerequisite: CE201. Elastic behavior of structural elements under axial, flexural and torsional loading. Shear and binding moment diagrams. Stress in and deformation of members, including beams. Lectures supplemented with laboratory demonstrations. 3 credit hours.

CE203 Elementary Surveying
Theory and practice of surveying measurements using tape, level and transit. Field practice in traverse surveys and leveling. Traverse adjustment and area computations. Adjustment of instruments, error analysis. Laboratory Fee. 3 credit hours.

CE206 Engineering Geology
Prerequisite: None. Introduction to relationship between geologic processes and principles to engineering problems. Topics include engineering properties of rock as a construction and foundation material, soil formation and soil profiles and subsurface water. 3 credit hours.

CE301 Transportation Engineering
A study of planning, design and construction of transportation systems including highways, airports, railroads, rapid transit systems and waterways. 3 credit hours.

CE302 Building Construction
Introduction to the legal, architectural, structural, mechanical and electrical aspects of building construction. Principles of drawing and specification preparation and cost estimating. 3 credit hours.

CE304 Soil Mechanics
Prerequisites: M203, CE202. Geological process of soil formation. Soil classifications. Physical properties are related to the principles underlying the potential behavior of soils subjected to various loading conditions. Methods of subsurface exploration. Laboratory demonstrations. 3 credit hours.

CE306 Hydraulics
Prerequisite: ME204. The mechanics of fluids and fluid flow. Fluid statics, laminar and turbulent flow. Impulse and momentum. Flow in pipes and open channels. Orifices and weirs. 3 credit hours.

CE312 Structural Analysis
Prerequisites: CE202; IE102. Basic structural engineering topics on the analysis of beams, trusses and frames. Topics include load criteria and influence lines; force and deflection analysis of beams and trusses; analysis of indeterminate structures by approximate methods, superposition and moment distribution. Framing systems of existing structures are studied. Computer Use Fee. 3 credit hours.

CE315 Environmental Engineering and Sanitation
Introduction to hydrology; population and water demand projections; water and wastewater transport systems. Problems concerning public health, water and wastewater treatment, solid waste disposal, air pollution, and private water supply and sanitary disposal systems. 3 credit hours.

CE316 Code Administration
Study of codes and regulations prepared and enacted for the public and employee safety along with the codes and regulations implemented to develop a uniform and balanced land development and usage program. Health codes, labor laws, zoning regulations, planning regulations and wetlands regulations are discussed. 3 credit hours.

CE317 Structural Design Fundamentals
Prerequisites: CE312, IE102. Fundamentals of structural behavior of members, connections and structural systems of steel and concrete. Effect on members of a variety of loading conditions varying from dead load through overloads producing failure. Computer Use Fee. 3 credit hours.

CE320 Civil Engineering Practice
Prerequisite: second semester junior or first semester senior status. Students are exposed to actual engineering projects by visiting an engineering office during the semester on a regular schedule. 1 credit hour.

CE323 Mechanics and Structures Laboratory
Prerequisite: CE312 (may be taken concurrently). Experiments covering mechanics and structural engineering. The response of metals and wood to different loading conditions will be examined. Laboratory instrumentation will be studied. Laboratory procedures, data collection, interpretation and presentation will be emphasized. Laboratory Fee. 2 credit hours.

CE325 Project Planning and Scheduling
Application of network analogy, critical path method, program evaluation review technique, precedence diagrams and analog charts to planning, scheduling, and controlling construction projects. Computer applications. 3 credit hours.

CE326 Computer Applications in Civil Engineering
Prerequisites: CE304, CE306, CE317 which may be taken concurrently; IE102. The development and evaluation of software for the solution of civil engineering problems. Laboratory Fee. 3 semester hours.

CE327 Soil Mechanics and Concrete Laboratory
Prerequisite: CE304 (may be taken concurrently). Experiments and testing in the areas of soil mechanics and concrete. Laboratory procedures, data collection and interpretation, and presentation of data will be emphasized. Laboratory Fee. 2 credit hours.

CE328 Hydraulics and Environmental Laboratory
Prerequisites: CE306 and CE315 (may be taken concurrently). Experiments and testing in the areas of hydraulics and environmental engineering. Laboratory procedures, data collection and interpretation, presentation of data will be emphasized. Laboratory Fee. 2 credit hours.

CE401 Foundation Design and Construction
Prerequisite: CE304 or instructor's consent. Application of soil mechanics to foundation design, stability, settlement. Selection of foundation type—shallow footings, deep foundations, pile foundations, mat foundations. Subsurface exploration. 3 credit hours.

CE402 Water Resources Engineering
Prerequisites: CE306 (may be taken concurrently), CE315. Study of principles of water resources engineering including surface and ground water hydrology. Design of water supply, flood control and hydroelectric reservoirs. Hydraulics and design of water supply distribution and drainage collection systems including pump and turbine design. Principles of probability concepts in the design of hydraulic structures. General review of water and pollution control laws. 3 credit hours.

CE403 City Planning
Engineering, social, economic, political and legal aspects of city planning. Emphasis placed on case studies of communities in Connecticut Zoning. Principles and policies of redevelopment. 3 credit hours.

CE404 Sanitary Engineering
Prerequisites: CE306 (may be taken concurrently), CE315. Study of physical, chemical and biological aspects of water quality and pollution control. Study of unit processes and operations of water and waste water treatment including industrial waste and sludge processing. Design of water treatment and sewage treatment systems including sludge treatment and incineration. 3 credit hours.

CE405 Indeterminate Structures
Prerequisites: ME307 or CE312; IE102, ME204. The analysis of statically indeterminate structures. Topics include approximate methods, moment distribution, conjugate beam, energy methods, influence lines and an introduction to matrix methods. Computer Use Fee. 3 credit hours.

CE407 Professionalism and Ethical Practice of Engineering
Prerequisite: Senior status, or permission of instructor. Principles of engineer-client, engineer-society and owner-contractor relationships examined from ethical, legal and professional viewpoints. Examination of codes of ethics and preparation of contract documents. 3 credit hours.

CE408 Steel Design and Construction
Prerequisite: CE317. Analysis, design and construction of steel structures. Topics include tension, compression and flexural members; connections; members subjected to torsion; beam-columns; fabrication, erection and shop practice. 3 credit hours.

CE409 Concrete Design and Construction
Prerequisite: CE317. Analysis and design of reinforced concrete beams, columns, slabs, footings, retaining walls. Basic principles of prestressed and precast concrete. Fundamentals of engineering drawings. 3 credit hours.

CE410 Land Surveying
Prerequisite: consent of instructor. A study of boundary control and legal aspects of land surveying, including deed research, evidence of boundary location, deed description and riparian rights. Theory of measurement and errors, position precision, state plane coordinate systems, photogrammetry. 3 credit hours.

CE411 Highway Engineering
Prerequisite: CE301 or instructor's consent. Highway economics and financing. Study of highway planning, geometric design and capacity. Pavement and drainage design. 3 credit hours.

COURSES

CE 412 Wood Engineering
Prerequisite: CE 202. Study of the growth and structure of wood and their influence on strength and durability, preservation and fire protection. The analysis and design of structural members of wood including beams, columns, and trusses; connections; glulam and plywood members. The design of wood structures. 3 credit hours.

CE 413 Masonry Engineering
Prerequisite: CE 202. The design and analysis of brick and concrete masonry non-reinforced and reinforced structures. Strength, thermal, fire and sound characteristics, testing and specifications. 3 credit hours.

CE 414 Route Surveying
Prerequisite: CE 203. A continuation of elementary surveying covering principles of route surveying, stadia surveys, triangulation, trilateration, practical astronomy, aerial photography, adjustment of instruments. Field problems related to classwork and computer application to surveying problems. Computer Use Fee. 3 credit hours.

CE 501 Senior Project
Prerequisite: senior status. Supervised individual or group project. The project may be the preparation of a set of contract documents for the construction of a civil engineering facility, research work with a report, or a project approved by the faculty adviser. Computer Use Fee. 3 credit hours.

CE 599 Independent Study
Prerequisites: consent of instructor and chairman of department. Opportunity for the student to explore an area of interest under the direction of a faculty member. Course must be initiated by the student and have the approval of the faculty adviser and chairman. 1-3 credit hours.

Communication

CO 100 Human Communication
The basic course in communication. Objectives are to create within each student an awareness of the omnipresence of communication and the problems surrounding the human communication process. Recommended for all UNH students, regardless of major field of study. 3 credit hours.

CO 101 Fundamentals of Mass Communication
Prerequisite: CO 100. An introduction to the mass media of newspapers, film, magazines, radio, television, trade publications and public relations. Course emphasizes media's impact upon society. 3 credit hours.

CO 103 Audio in Media
Concerned with sound as used in radio, television and film. The course entails lectures, demonstration, and lab practice of sound production and transmission. Laboratory Fee. 3 credit hours.

CO 200 Theories of Group Communication
Prerequisite: CO 100. Theoretical aspects of communication which affect the accomplishment of group tasks, and techniques of observation of group processes, particularly within the framework of media production crews. 3 credit hours.

CO 203 Radio Production
Prerequisite: CO 103. Theory and practice of techniques involved in the function and operation of a radio station. Microphone techniques, engineering operations, transmitter readings, logging and programming will be included. Laboratory Fee. 3 credit hours.

CO 208 Introduction to Broadcasting
General survey and background of broadcasting, cable, pay and premium TV services and new technologies. Current changes, law, regulation, financing and public input are examined. Emphasis is placed on current status and future potential of these industries. 3 credit hours.

CO 212 Television Production I
Prerequisites: CO 103, CO 208. Introduction to the mechanics, techniques, and aesthetic elements of television production. This course provides the basic grounding in the art and craft of the medium. Laboratory Fee. 3 credit hours.

CO 214 Elements of Film
Prerequisite: CO 101 or permission of the instructor. Stresses the understanding of film as a creative form of communication. Student is introduced to basic techniques of motion picture production through lectures, audio-visual activity, and small group involvement. Laboratory Fee. 3 credit hours.

CO 220 Film Production I
Prerequisites: CO 103, CO 214. Involves the transformation of an original idea into film: Initial analysis, proposed treatment plan, sequencing, film scripting, pre-production planning, nature of the production process. A short film is produced through team effort. Laboratory Fee. 3 credit hours.

CO 300 Persuasive Communication
Prerequisite: CO 100. An examination of the theories of persuasive communication including the influence and effect of communication on the rhetoric of politics, religion, advertising, etc. 3 credit hours.

CO302 Social Impact of Media
Prerequisite: CO101. Examines such problems as regulatory control of the media, law and ethics, and the behavioral aspects of mass and interpersonal communication. Students examine the variety of media writing and commence writing their own media messages. 3 credit hours.

CO307 Writing for Television and Radio
Prerequisite: CO208. A study of drills and exercises in writing television and radio news, drama, public service announcements, and documentaries. Emphasis is placed on first-hand practical experience assignments and criticism of completed copy. 3 credit hours.

CO308 Broadcast Journalism
Prerequisite: CO307. Entails practice in newsgathering, editing, writing, and use of news services and sources. Creating documentary and special event programs through film for television news, on-the-spot film, and video-tape reporting are included. 3 credit hours.

CO312 Televison Production II
Prerequisite: CO212. An intermediate course designed to provide the student with the opportunity to coordinate the many areas of TV production. Video tape and live production techniques are employed. Laboratory Fee. 3 credit hours.

CO320 Film Production II
Prerequisite: CO220. The creative process involved in translating advertising copy to film based upon advertising objectives and consumer motivation, appeals, and behavior. Involves production of filmed "spots" by team efforts. Laboratory Fee. 3 credit hours.

CO327 Dramatic Scriptwriting for Film and Television
Dramatic scriptwriting for film and television will concentrate on dramatic scripts including: how to work a treatment, write dialogue, include camera shots. 3 credit hours.

CO335 Media Performance
Theory and application of performance techniques. Projects in performance for radio, television and film. 3 credit hours.

CO340 The History of Film
A survey of the historical development of the film medium consisting of lectures, discussions and the screening of films which demonstrate the interrelationships between the historical development and the establishment of the film medium as a powerful communicative art form. 3 credit hours.

CO399 Media Campaigns
This course will examine the role played by the mass media in political campaigning. Students will look at the historical perspectives and study current trends. FCC laws regarding advertising, lowest unit cost, section 315 and other regulations will be examined. Students will view videotapes of past political media campaign examples and will have the opportunity to participate in and produce hypothetical political media campaigns. 3 credit hours.

CO402 Internship
An internship program for students who qualify and would like an in-field experience at local radio stations, television stations, advertising agencies, etc. 3 credit hours.

CO408 Public Relations—Systems and Practices
The objective of this course is to make students aware of the depth and sensitivity of the role public relations plays in today's business environment. This course will serve to orient the students to possible career paths utilizing communication, journalistic and management skills as well as skills acquired in business and English courses. This course will utilize the lecture/discussion, case study and guest speaker approach to teach all students the historical, theoretical, practical and technical applications of public relations. 3 credit hours.

CO410 Management Communication Seminar
Open to all upper division students, regardless of major. Involves structure and function of communication in organizations. Practice in understanding and managing interpersonal differences. Emphasizes concepts and principles needed for effective management of organizational communication processes. 3 credit hours.

CO412 Advanced Television Production
Prerequisite: CO312. Essentials of budgeting, marketing and regulatory policies and rules. Production teams are formed to produce sophisticated local television programs under close supervision. 3 credit hours.

CO415 Broadcast Management
Prerequisite: CO208. Involves the administrative and personnel problems of television and radio studio management; broadcast engineering; local sales; continuity; and programming. Discussions will include scheduling and the development of facilities. 3 credit hours.

COURSES

CO 416 International Broadcasting
TV and radio broadcasting policy, operations, broadcast economics and programming around the world will be examined, compared and contrasted with those in the United States. The journalistic process and entertainment programming in several countries will be explored. 3 credit hours

CO 440-454 Special Topics
Special topics in communication which are of special interest or current interest. 3 credit hours.

CO 599 Independent Study in Communication
Prerequisite: consent of faculty member and chairman of department. 3-6 hours are usually reserved for a senior project-paper in communication; student may take 1-3 credit hours of CO 599 per semester with a maximum of 6. Independent study credits earned in other departments are applied toward the maximum of 6 in communication. Opportunity for the student under the direction of a faculty member to explore an area of interest. 1-3 credit hours.

Computer Science

CS 102 Introduction to Programming/FORTRAN
Prerequisite: M115. A first course in computer programming using the FORTRAN language, for engineering and science students. Problem solving methods and algorithm development. Designing, coding, debugging and documenting FORTRAN programs using good programming style. Computer Use Fee. 3 credit hours.

CS 104 Programming in RPG
An introductory course for management information systems majors that will familiarize the student with an interactive programming environment, and with the most common types of report programs required in a business environment. Emphasis will be on the applications of computers in business. The language RPG will be used to illustrate the concepts of input, output, data processing and reports. Several programs will be written. Computer Use Fee. 3 credit hours.

CS 105 Introduction to Programming/COBOL
Prerequisite: M109 and either CS 104 or CS 108. A first course in computer programming using the COBOL language, for business data processing majors. Problem-solving methods and structured programming style. Designing, coding, debugging and documenting COBOL programs. Student programs will be oriented toward business problems. Computer Use Fee. 3 credit hours.

CS 106 Introduction to Programming/Pascal
Prerequisite: M115 or equivalent. A first course in computer science using the Pascal language, for computer science majors and minors. Introduces problem solving methods and algorithm development and teaches how to design, code, debug and document programs using good style. Computer Use Fee. 3 credit hours.

CS 107 Introduction to Data Processing
An introduction to the concepts underlying the modern application of computer systems. Current technology and social issues are considered. Simple programming is done in the BASIC language. Intended for business and humanities students taking only one computer course or as a basis for further work with computers. Not to be taken for credit by majors. Computer Use Fee. 3 credit hours.

CS 108 Introduction to Programming/BASIC
An introductory course for non-computer science majors. The student will become familiar with computers and write several programs in the BASIC language. Emphasis will be on problems drawn from everyday life. Computer Use Fee. 3 credit hours.

CS 224 Advanced Programming/ FORTRAN
Prerequisite: CS 102 or CS 228. Continues to develop program design techniques, especially involving larger and more complex problems. Simple data structures. Modular program design. Advanced debugging techniques. Programming problems will involve typical engineering applications. Computer Use Fee. 3 credits hours.

CS 225 Advanced Programming/COBOL
Prerequisite: CS 105 or CS 229. Continues to develop program design techniques and apply them to increasingly complex business oriented problems. Topics include using COBOL interactivity, tables, the sort-merge utility, subroutines, advanced debugging. Computer Use Fee. 3 credit hours.

CS 226 Advanced Programming and Data Structures/Pascal
Prerequisite: CS 106 or CS 227. Objectives are to continue to develop program design techniques and apply them to more complex problems. Data structures: linked lists, stacks, trees. String processing. Recursion. Debugging technique. Programming problems will be oriented toward systems programming. Computer Use Fee. 3 credit hours.

CS 227 Intensive Pascal
Prerequisite: M 109 or equivalent and competency in COBOL, FORTRAN or PL/1. Objectives: to teach the syntax and idiosyncracies of the Pascal language. A five week introduction to the Pascal language for competent programmers, which will prepare them for CS 226. Covers all the material of CS 106, but at an accelerated rate. Intended for students who transfer into one of the computer science programs. Not to be taken for credit by a student with credit for CS 106. One program per week will be required. Computer Use Fee. 1 credit hour.

CS 228 Intensive FORTRAN
Prerequisite: CS 226. A five-week course during which FORTRAN programming skill is acquired by analogy to Pascal. Several programs will be written. This course will run during the first five weeks of the semester, before CS 229. Computer Use Fee. 1 credit hour.

CS 229 Intensive COBOL/BASIC
Prerequisite: CS 226. A 10-week course during which the skills required for programming in COBOL and BASIC are covered. At least six programs will be written: four in COBOL, two in BASIC. This course will run during the last 10 weeks of the semester, after CS 228. Computer Use Fee. 2 credit hours.

CS 237 Data Structures and Algorithms
Prerequisite: CS 226. The following topics are covered: data structures—trees, graphs, hash tables. Recursive techniques—divide and conquer, backtracking, recursion elimination. Algorithms—sorting, searching, garbage collection, storage management, shortest paths, parsing. Analysis of the complexity of algorithms. The required programming will be done in Pascal. Computer Use Fee. 3 credit hours.

CS 320 Operating Systems
Prerequisite: CS 237 and CS 334. A study of operating systems, historical and modern. Process management, concurrency, deadlock, memory management, file systems, interrupts, resource allocation, protection. 3 credit hours.

CS 325 APL
Prerequisite: CS 102. The language APL and its applications. Emphasis is given to aspects of the language which make it especially appropriate for processing matrices and handling numeric data. Intended for science and engineering students who want to learn a second computer language that is likely to be useful in their work. Not to be taken for credit by CS majors. Computer Use Fee. 3 credit hours.

CS 332 PL/1
Prerequisite: CS 225. An advanced course in programming using PL/1. Topics: sorting, searching, string manipulation, finite state machines, linking, recursion. Not for credit by majors. Computer Use Fee. 3 credit hours.

CS 334 Machine Organization/ Assembly Language
Prerequisite: CS 224 or 225 or 226. Study of the functional characteristics of computers and their peripherals. Programming in assembly language. Topics: data representation, error flags, addressing techniques, macros, file I/O, program linkage, interrupts. Computer Use Fee. 3 credit hours.

CS 337 Introduction to Data-Base Systems
Prerequisite: CS 237. The development, structure, capabilities and use of data-base systems; their benefits and costs. Topics include what they do and how it is accomplished, data structures, privacy and security, comparison of typical DB systems. 3 credit hours.

CS 338 Structure of Programming Languages
Prerequisite: Competence in three programming languages. The structure, syntax and semantic aspects of several languages are studied. Short programs will be written in 3 new languages. Computer Use Fee. 3 credit hours.

IE 339 Theory and Construction of Compilers
Prerequisites: CS 237, CS 334 and CS 338. Assemblers, Interpreters and Compilers. Finite state machines and their application to lexical analysis. Parsing, syntactic analysis and P-code. Semantic analysis, code generation and optimization. Programming in Pascal may be required. 3 credit hours.

CS 420 Software Design and Development
Prerequisite: Senior C.S. Standing. This course will bring together ideas and skills learned in the preceding courses. It includes methods for design, optimization and debugging, interfacing with users and with the computing environment, and documentation. These issues are dealt with on a mature level in order to prepare students for future jobs. A large project will be designed and implemented by the class. Computer Use Fee. 3 credit hours.

CS 425 Principles of Computer Graphics
Prerequisite: M 118 and either CS 224 or CS 226. Development and implementation of the fundamental algorithms of computer graphics. Topics covered will include 2-D viewing, geometric transformations, clipping, segmentation, curves, user interaction, and an introduction to 3-D viewing and surfaces. Computer Use Fee. 3 credit hours.

COURSES

CS 440 Programming Laboratory
A laboratory course in which the students will write a series of programs under the guidance of a faculty member. The programs will be written in a currently standard systems programming language, such as "C," "FORTH" or "LISP." Programming assignments will be an extension of the course material of one of the junior/senior courses, and will provide an opportunity for students to apply the theory learned in these courses. This course can be taken repeatedly, working in different languages or doing more advanced projects. Computer Use Fee. 1 credit hour.

CS 450-455 Special Topics
Prerequisite: Junior standing. An examination of new developments or current practices in computer science. One topic will be selected for thorough study. 3 credit hours.

CS 478 Artificial Intelligence/ LISP
Prerequisite: CS224 or CS226. For computing majors. Objectives: to teach the concepts, syntax and and procedures of the LISP language and to acquaint the student with the present capabilities of artificial intelligence. The course will investigate, through programming projects, those methods of logic and mathematics pertinent to AI research. Topics: expert systems, minimax search, alpha-beta pruning, question answering systems, game trees, learning machines. Computer Use Fee. 3 credit hours.

CS 504 Senior Project
Prerequisite: senior status and permission of the department. The student, in conjunction with a faculty adviser, selects and works on a project. Work is presented at a seminar at the end of the semester. 3 credit hours.

Criminal Justice

CJ 100-101 Introduction to Criminal Justice I & II
Survey of criminal justice system with emphasis upon prosecution, corrections and societal reaction to offenders. Retribution, rehabilitation, deterrence, and incapacitation serve as generic frames of reference and theoretical points of departure for analyzing the dispositional and correctional processes. Introduction to Criminal Justice I focuses on the first half of the process—from prosecution through the courts; Introduction to Criminal Justice II completes the cycle from the courts through the correctional system. 3 credit hours each.

CJ 102 Criminal Law
The scope, purpose and definitions of substantive criminal law: criminal liability, major elements of statutory and common law offenses (with some reference to the Connecticut Penal Code) and significant defenses. 3 credit hours.

CJ 105 Introduction to Security
A general survey of the major historical, legal and practical developments and problems of security. The course will stress the components, organization and objectives of security, the trend toward professionalization, the role of security in the public and private sectors and its relationship to management. 3 credit hours.

CJ 201 Principles of Criminal Investigation
An introduction to criminal investigation in the field. Conducting the crime scene search, interview of witness, interrogation of suspects, methods of surveillance and the special techniques employed in particular kinds of investigation. 3 credit hours.

CJ 203 Security Administration
This course will present an overview of security systems found in retail, industrial and governmental agencies, the legal framework for security operations, and the administrative and procedural processes in security management. 3 credit hours.

CJ 204 Forensic Photography with Laboratory
An introduction to basic techniques, material and other aspects of crime scene photographs. Theory and practice of photographic image formation and recordings. Laboratory exercises with emphasis on homicide, sex offenses, arson and accident photograph techniques. Laboratory Fee. 3 credit hours.

CJ 205 Interpersonal Relations
Prerequisite: P111. Theories, conceptual models and research related to interpersonal relations. Topics include reciprocal theory, attitudes and labeling theory. 3 credit hours.

CJ 209 Correctional Treatment Programs
Prerequisites: CJ100, CJ101. Various treatment modalities employed in the rehabilitation of offenders. Field visits to various correctional treatment facilities such as half-way houses and community-based treatment programs. 3 credit hours.

CJ 215 Introduction to Forensic Science
Prerequisite: CJ201. A classroom lecture/discussion session and a laboratory period. Topics include the recognition, identification, individualization and evaluation of physical evidence such as hairs, fibers, chemicals, narcotics, blood, semen, glass, soil, fingerprints, documents, firearms and tool marks. Laboratory Fee. 3 credit hours.

CJ 217 Criminal Procedure I
Prerequisites: CJ 100, CJ 101, CJ 102. An inquiry into the nature and scope of the U.S. Constitution as it relates to criminal procedures. Areas discussed include the law of search and seizure arrests, confessions and identification. 3 credit hours.

CJ 218 Criminal Procedure II and Evidence
Prerequisites: CJ 100, CJ 101, CJ 102, CJ 217. Legal doctrines, employed in controlling the successive stages of the criminal process. Rules of law related to wiretapping and lineups, pretrial decision making, juvenile justice and trial. 3 credit hours.

CJ 220 Legal Issues in Corrections
Prerequisites: CJ 100, CJ 101, CJ 217, junior status. An examination of the legal foundations of correctional practice and a review of recent judicial decisions which are altering the correctional environment. An analysis of the factors and forces which are creating a climate of significant reform in corrections. 3 credit hours.

CJ 221 Juvenile Justice System
Prerequisites: CJ 100, CJ 101, P 111, SO 113. An analysis of stages and decisions made at critical junctures of the juvenile justice process. Topics include an analysis of Supreme Court treatment of juvenile justice issues, and the ability of the juvenile justice system to respond to juvenile crime. The focus of the course is on the processing of juveniles through the system, and the special problems unique to juvenile justice. 3 credit hours.

CJ 226 Industrial Security
Prerequisite: CJ 105. Concepts of security as it integrates with industrial management systems will be presented along with industrial security requirements and standards, alarms and surveillance devices, animate security approaches, costing, planning and engineering. Principles of safety practices and regulations will be covered, as well as fire prevention, property conservation, occupational hazards and personal safeguards. 3 credit hours.

CJ 227 Fingerprints with Laboratory
Prerequisites: CJ 201, CJ 215. This course will study the genetics and mathematical theory relating to fingerprints, chemical and physical methods used in developing latent fingerprints, and major systems of fingerprint classification. Laboratory Fee. 3 credit hours.

CJ 300 History of Criminal Justice
Prerequisites: CJ 100, CJ 101. This course is intended to trace the development of the major C.J. elements including police, prisons, probation and parole. Significant historical events and philosophical postulates as they pertain to this development are explored. 3 credit hours.

CJ 301 Group Dynamics in Criminal Justice
Prerequisites: CJ 205, CJ 206, P 111. An analysis of theory and applied methods in the area of group process. Focus on both individual roles and group development as they relate to criminal justice issues. Experiential exercises are included. 3 credit hours.

CJ 303-304 Forensic Science Laboratory I and II
Prerequisite: CJ 215. Specific examination of topics and laboratory testing procedures introduced in CJ 215. In the classroom, laboratory procedures are outlined and discussed. Identification and individualization of evidence; casting of hairs and fibers for microscopic identification; electrophoretic separation of blood enzymes. Laboratory Fee. 3 credit hours each.

CJ 306 Security Problems Seminar
Prerequisite: CJ 105, CJ 203. An analysis of special problem areas including college and university campuses, hospitals, hotel/motels, etc. Also, special problems concerning computer protection, bank security, executive personnel protection, credit cards, case law and legal aspects, control of proprietary information and white collar crime. 3 credit hours.

CJ 310 Criminal Justice Institutions
Prerequisite: CJ 300. This course will examine the societal and psychological implications of various types of institutions. This will include both social and total institutions and will examine their similarities and dissimilarities with particular emphasis on their implications for Criminal Justice. 3 credit hours.

CJ 311 Criminology
Prerequisites: CJ 100, CJ 101, P 111, SO 113. An examination of principles and concepts of criminal behavior; criminological theory; the nature, extent and distribution of crime; legal and societal reaction to crime. Same course as SO 311. 3 credit hours.

CJ 400 Criminal Justice Problems Seminar
Prerequisites: CJ 100, CJ 101, CJ 300. An examination of theoretical and philosophical issues affecting the administration of justice: the problems of reconciling legal and theoretical ideals in various sectors of the criminal justice system with the realities of practice. 3 credit hours.

COURSES

CJ 402 Police in Society
Prerequisites: CJ 100, CJ 101, CJ 300. This course will acquaint the student with the major developments and trends of policing in a free society. Emphasis will be placed on American police and the role of the police in a democracy. Further emphasis will be placed on the examination of the interactions between the police and the communities they serve. 3 credit hours.

CJ 403 Advanced Forensic Science I
An in-depth examination of blood grouping procedures for red cell antigens, isoenzymes and serum proteins, identification and typing of body fluids and their stains; collection, processing and handling of biological materials in casework. Laboratory Fee. 4 credit hours.

CJ 404 Advanced Forensic Science II
An in-depth examination of several subjects in modern criminalistics, including hair and fiber analysis and comparison, arson accelerants and explosives residues, glass comparisons and forensic chemistry. Laboratory Fee. 4 credit hours.

CJ 405-407 Seminar in Criminal Justice
Prerequisite: senior status. An intensive analysis of variable topics of critical relevance in the administration of justice: a seminar exposing the student to a concentrated learning experience conducive to acquiring special expertise in a special academic area. 3 credit hours each.

CJ 408 Correctional Counseling I
Prerequisites: P111, P336, CJ 205, CJ 209, CJ 301. This course is designed to provide students with the knowledge of basic counseling and evaluation theory, methods, and research as applied to a correctional setting. 3 credit hours.

CJ 409 Correctional Counseling II
Prerequisite: CJ 408. Applications of correctional counseling theory and methods. Includes interviewing techniques and case intervention strategies with offenders. Focuses predominantly on one-to-one counseling situations. 3 credit hours.

CJ 410 Legal Issues in Private Security
Examines legal problems affecting the private security industry and ways to prevent loss from litigation. Includes intentional torts, negligence, agency, contracts and law of arrest, search and seizure, and interrogation by citizens. 3 credit hours.

CJ 415 Crime Scene Investigation and Pattern Evidence
Prerequisites: CJ 201, CJ 215. A study of the methods and techniques of crime scene investigation and documentation and physical evidence recognition and collection.

CJ 416 Seminar in Forensic Science
Prerequisites: CJ 201, CJ 215. An examination and evaluation of current issues in the law enforcement science field. The course is also designed to aid in understanding how various physical evidence can be utilized as an investigative tool. And, a review of modern analytical techniques and their application in law enforcement science. 3 credit hours.

CJ 498 Research Project
Prerequisite: consent of the department chairman. The student carries out an original research project in a criminal justice setting and reports the finds. 3 credit hours.

CJ 501 Criminal Justice Internship
Prerequisite: consent of the department chairman. This program provides monitored field experience with selected federal, state or local criminal justice agencies or forensic science laboratories subject to academic guidance and review. 3 credit hours.

CJ 599 Independent Study
Prerequisite: consent of the departmental chairman. An opportunity for the student, under the direction of a faculty member, to explore and acquire competence in a special area of interest. 1-3 credit hours.

Dietetics and Institutional Management

DI 214 Food Service Management Systems I
Principles of meal planning and writing menus for volume food combinations, texture, color, nutrition and cooking methods. The interrelated steps involved in quantity food production, the delivery of food and the responsibilities of management along with the tools they have to use as administrators will be explored. 3 credit hours.

DI 215 Food Service Management Field Experience I

Prerequisite: Consent of instructor. The student will complete 150 hours of preplanned work experience at a health related facility under the direction of a registered dietician. Each student will keep a log of the hours and activities completed at the facility and will report to the instructor every two weeks. A project agreed upon by the student, the instructor and the facility dietician will be completed by the student and prepared as a term paper. This course is required for dietetic technology majors. 3 credit hours.

DI 216 Food Service Management Systems II

Basic principles of food sanitation and work safety are stressed. The student will write policies and procedures and conduct an in-service training class for a food service facility in the hospitality field. Emphasis is placed on the causes and prevention of food poisoning and the moral and legal responsibilities of management to present safe and sanitary food to patrons. 3 credit hours.

DI 217 Food Service Management Field Experience II

Prerequisite: Consent of instructor. The student will complete 150 hours of preplanned work experience at a health related facility under the direction of a registered dietician. Each student will keep a log of the hours and activities completed at the facility and will report to the instructor every two weeks. A project agreed upon by the student, the instructor and the facility dietician will be completed by the student and prepared as a term paper. This course is required for dietetic technology majors. 3 credit hours.

DI 218 Food Service Management Systems III

Investigation of management problems associated with employee relations in the hospitality field will be explored. Specific attention will be given to union activity in the hospitality industry. Case studies will be analyzed with reguard to collective bargaining, grievance procedures, mediation and concilation. 3 credit hours.

DI 219 Food Service Management Field Experience III

Prerequisite: Consent of instructor. The student will complete 150 hours of preplanned work experience at a health related facility under the direction of a registered dietician. Each student will keep a log of the hours and activities completed at the facility and will report to the instructor every two weeks. A project agreed upon by the student, the instructor and the facility dietician will be completed by the student and prepared as a term paper. This course is required for dietetic technology majors. 3 credit hours.

DI 220 Food Service Management Systems IV

The feasibility, planning, development and construction of the physical plant of the hotel and food service facilities are considered and analyzed. Investigation of management problems associated with the mechanical systems of the physical plant. In addition, systems such as elevators, fire equipment, swimming pools, communications, data processing, laundry and housekeeping equipment are discussed. 3 credit hours.

DI 221 Food Service Management Field Experience IV

Prerequisite: Consent of instructor. The student will complete 150 hours of field work in hotels, restaurants, institutions, clubs, dietetics or tourism agencies. The field experience will emphasize selected aspects of personnel management, and will be accompanied by readings, reports, journals and faculty conferences. This course is not open to dietetic technology majors. 3 credit hours.

DI 222 Dietetic Seminar

Special topics relating to food service management in institutions and community nutrition care programs. After selecting a topic on contemporary problems, the student will review the literature, prepare a bibliography, and make an oral presentation before the seminar class. 1 credit hour.

DI 300 Special Topics

The dietetics and institutional management fields are constantly changing due to new technology and avenues for their expansion and management. The purpose of these courses is to select special topics that are not covered in existing courses and expose students to recent developments and future research in the following specific courses. 3 credit hours. Selected courses will be offered in the fall, spring and summer semesters.

DI 300 Fundamentals of Food

Introduction to the fundamental concepts, skills and techniques of basic food preparation and baking. Special emphasis is given to the study of ingredients, cooking theories, terminology, equipment, technology, weights and measures, formula conversion and procedures. Instruction will include: experimental hands-on preparation, demonstration and lecture. 3 credit hours. Laboratory fee.

COURSES

DI300 Nutritional Analysis
Nutritional analysis of food as it relates to the Recommended Daily Dietary Allowances will be done for regular and therapeutic diets. Laboratory values and anthropometric measurements will be explored with their practical applications toward the nutritional assessment of the individual. 3 credit hours.

DI300 Diets Throughout the Life Cycles
Prerequisite: BI115. A study of the life cycles from infancy to gerontology, and the dietary implications to these changes in the body will be explored. Emphasis will be placed on current research in the field of nutrition. 3 credit hours.

DI300 Modification of Diets
Prerequisites: BI115, BI116. Normal diets will be written and then modified to accommodate needs of specific disease states as related to therapeutic diets. Therapeutic diets requiring multiple restictions will be analyzed. 3 credit hours.

DI300 Computer and Dietetics
In this program several nutritional analyses computer programs are used to calculate nutritive values of single foods, recipes, meals and menus. Analyses include percent of Recommended Dietary Allowances according to individual age, sex, weight and height for nutrients, trace elements and amino acids. The programs allow creation of nutritionally balanced diets, identifies nutritive deficiencies and permits creation of any type of diet for any number of people. 3 credit hours.

DI300. Computer and Food Service
This course enables one to use the computer to perform tasks related to menu writing, adjustment of receipes, and inventory control. Regular menus and therapeutic menus are provided and these menus may be modified to fit specific needs. Using the computer for the arithmetic task of volume adjustment saves time and permits the planning of recipes and menus for large numbers of people, and provides timely and accurate management reports. 3 credit hours.

DI300 Computer and Cost Control
This computer program allows one to add inventory costs to menus and recipes. It enables one to change or delete menus from the cycle plan with the immediate understanding of the cost impact. Cost per serving figures for budgetary purposes are available. The program provides stock status reports, monthly usage summaries and purchase summaries per vendors. 3 credit hours.

DI598 In-process Registration for Cooperative Education Programs (Co-op)
Permission of the department co-op adviser required. The adviser works closely with the student in designing a plan of study that integrates full-time work experience and academic study within the student's academic major and area of interest. (Offered fall, spring and summer semesters.) Non-credit, but may be used with other appropriate credit courses.

DI599 Independent Study
Permission of the department chairman required. Independent research projects or other approved phases of independent study. 3 credit hours.

Economics

EC100 Economic History of the U.S.
Development of American economic interactions in the various stages of agriculture, trade, industry, finance and labor. Change of economic practices and institutions, particularly in business, banking and labor as well as the changing role of government. 3 credit hours.

EC133 Principles of Economics I
Foundations of economic analysis, including economic progress, resources, technology, private enterprise, profits and the price system. Macroeconomics including national income, employment and economic growth. Price levels, money and banking, the Federal Reserve System, theory of income, employment and prices, business cycles and problems of monetary, fiscal and stabilization policy. 3 credit hours.

EC134 Principles of Economics II
Prerequisite: EC133. Microeconomics including markets and market structure and the allocation of resources. The distribution of income, the public economy, the international economy and selected economic problems. 3 credit hours.

EC250 Economics and U.S. Industrial Competitiveness
An examination of the free market and the most effective path to revitalizing the competitiveness of U.S. industry in world markets. Addressed are such key issues as government assistance to industries, regions and workers; regulation and antitrust; dealing with international competition; and promoting trade in services. 3 credit hours.

EC300 Economics of Energy and the Environment
Economic and policy background of petroleum, natural gas, coal, electric utility and nuclear energy from an American and international economic perspective. Energy developments in Western Europe, the Soviet Union and Asia are also discussed. Environmental issues related to energy are also important. 3 credit hours.

EC311 Government Regulation of Business
Prerequisites: EC133, EC134. An appraisal of public policy toward transportation, trusts, monopolies, public utilities and other forms of government regulation of economic activity. 3 credit hours.

EC312 Contemporary Economic Problems
The course concerns selected current economic problems; inflation, unemployment, poverty in an affluent society, economic issues in health services, the economics of higher education, and the problems of the cities and population. The purpose is to examine and to explore policies to cure these problems. 3 credit hours.

EC314 Public Finance and Budgeting
Prerequisites: EC133, EC134. A general survey of government finance at the federal, state, and local levels, including government expenditures, principles of taxation, public borrowing, debt management, and fiscal policy for economic stabilization. 3 credit hours.

EC336 Money and Banking
Prerequisites: EC133, EC134. Nature and function of money, commercial banking system, Federal Reserve System and the Treasury, monetary theory, financial institutions, international financial relationships, history of money and monetary policy in the United States and current problems of monetary policy. 3 credit hours.

EC340 Microeconomic Analysis
Prerequisites: EC133, EC134. Study of commodity and factor pricing, theory of production, cost theory, market structures under perfect and imperfect market conditions. 3 credit hours.

EC341 Macroeconomic Analysis
Prerequisites: EC133, EC134, A 111. An investigation of the makeup of the national income and an analysis of the factors that enter into its determination. The roles of consumption, investment, government finance and money influencing national income and output, employment, the price level and rate of growth; policies for economic stability and growth. 3 credit hours.

EC342 International Economics
Prerequisites: EC133, EC134. The role, importance and currents of international commerce; the balance of international payments; foreign exchange and international finance; international trade theory; problems of payments adjustment; trade restrictions; economic development and foreign aid. 3 credit hours.

EC345 Comparative Economic Systems
Prerequisites: EC133, EC134. The course examines contemporary economic systems, ranging from those that rely heavily upon market mechanism to those that rely on central planning in decision making. A selected country for each system is taken into consideration. 3 credit hours.

EC350 Economics of Labor Relations
Prerequisites: EC133, EC134. History of the union movement in the United States, union structure and government, problems of collective bargaining, economics of the labor market, wage theories, unemployment, governmental policy and control and problems of employment security. 3 credit hours.

EC420 Applied Economic Analysis
Prerequisites: EC133, EC134. A study of applied economics involves application of the tools of economic analysis to the real-life problems of business firms, government agencies and other organizations. 3 credit hours.

EC440 Economic Development
Prerequisites: EC133, EC134. Economic problems of developing countries and the policies necessary to induce growth. Individual projects required. 3 credit hours.

EC442 Economic Thought
Prerequisites: EC133, EC134. The development of economic doctrine from mercantilism and Adam Smith to Marx and to the thinking of modern-day theorists, such as Friedman, Galbraith, Schumpeter, and Debreu. Emphasis upon the main currents of thought with the applicability to present day problems. Individual study and reporting. 3 credit hours.

EC599 Independent Study
Prerequisite: consent of the department chairman. Independent research projects or other approved forms of independent study. 3 credit hours.

Electrical Engineering

EE201 Basic Circuit Analysis I
Prerequisites: M117, concurrent registration in M118, PH205. Energy effects and ideal circuit elements, resistance, capacitance, inductance; active devices, Kirchhoff's Laws, energy conservation; resistive networks, Thevenin/Norton theorems, voltage and current dividers; natural response of first and second-order networks, natural frequencies/poles. 3 credit hours.

COURSES

EE202 Basic Circuit Analysis II
Prerequisites: EE201, M118. Continuation of EE201. Forced response, transfer functions, initial conditions, impulse response, complete solutions. Sinusoidal steady state techniques, complex transfer functions. Power, energy, power factor, vars. 3 credit hours.

EE211-212 Principles of Electrical Engineering I and II
Prerequisites: PH150, PH205, M118 (may be taken concurrently). Circuit variables, resistance, capacitance, inductance, power and energy. Kirchhoff's laws, analysis of circuits, equivalent circuits. Instruments and measurement techniques. Diodes and transistors, amplifiers and wave shaping circuits. Electric and magnetic field effects, forces, torques, motor and generator characteristics, transformers. Digital logic and elements of logic and switching circuit design. EE212 will include selected laboratory experiments. These courses are intended for non-electrical engineering majors. 6 credit hours.

EE253 Electrical Engineering Laboratory I
Prerequisite: EE202 (may be taken concurrently). Laboratory exercises and projects including resistance, capacitance and inductance measurement, diode, transistor and operational amplifier characteristics. Measurement of electrical parameters. Characteristics and applications of basic electrical laboratory apparatus. Laboratory Fee. 3 credit hours.

EE255 Digital Systems I
Fundamental concepts of digital systems. Binary numbers, Boolean Algebra, combinational logic design using gates, map minimization techniques. Use of modular MSI components such as adders, multiplexers, etc.; Analysis and design of simple synchronous sequential circuits, including Flip-Flops, shift registers and counters. 3 credit hours.

EE301 Network Analysis
Prerequisites: EE202. Properties of transfer functions; frequency response curves, bandwidth and quality factor. Mutual inductance and two port parameters. Power, energy and harmonic phenomena in polyphase systems. Computer Use Fee. 3 credit hours.

EE302 Systems Analysis
Prerequisite: EE301. Continuous and discrete signals, difference equations. The convolution sum and integral. The Z transform. Fourier series and Fourier transform, ideal filter properties. Frequency analysis of signals. 3 credit hours.

EE341 Digital Computer Techniques
Prerequisites: M118, EE202. Numerical analysis techniques with engineering problems. Design and execution of digital computer algorithms. Digital simulation of dynamic systems. Computer Use Fee. 3 credit hours.

EE344 Electrical Machines
Prerequisite: EE301. Fields, forces, torques in magnetic systems. Theory characteristics and applications of direct current and alternating current machines, including transformers and synchronous and induction machinery. 3 credit hours.

EE347 Electronics I
Prerequisite: EE202. Fundamental principles and applications of electronic devices and circuits using diodes, bi-polar transistors and FET's. Analysis and design limited to single stage circuits. Applications to analog systems with an introductory discussion of digital circuits. 3 credit hours.

EE348 Electronics II
Prerequisites: EE301, EE347. Principles and applications of analog circuits at a more advanced level using bi-polar and FET devices. Small signal analysis using hybrid models including both single stage and multistage amplifiers and difference amplifiers. 3 credit hours.

EE349 Electrical Engineering Laboratory II
Prerequisites: EE347 and EE348 (concurrently). Laboratory exercises and design projects intended to give the student practical experience in BJT and FET single and multiple stage amplifier design. Experiments also include diode circuits, power amplifiers and differential amplifiers. Laboratory Fee. 3 credit hours.

EE356 Digital Systems II
Prerequisite: EE255 and, EE371 or IE334. Design of larger digital systems. Use of MSI and LSI components. Computer aided digital design. Other topics of current interest. Computer use fee. 3 credit hours.

EE361 Electromagnetic Theory
Prerequisite: M203, PH205. Basic electromagnetic theory including static fields of electric charges and the magnetic fields of steady electric currents. Fundamental field laws. Maxwell's equations, scalar and vector potentials. Laplace's equation and boundary conditions. Magnetization, polarization, field plotting. 3 credit hours.

EE362 Electromagnetic Waves
Prerequisite: EE361. Electromagnetic wave propagation and reflection in various structures, including coaxial, two wire and waveguide systems. Various modes of propagation in rectangular waveguides. The dipole antenna. Transmission lines and Smith chart techniques. 3 credit hours.

EE371 Computer Engineering I
Prerequisite: IE102, EE255. Introduction to the architecture of digital computers. Stored program concept, instruction processing, memory organization, instruction formats, addressing modes, instruction sets, assembler and machine language programming. Input/Output programming, Direct memory access. Bus structures and control signals. Computer use fee. 3 credit hours.

EE420 Random Signal Analysis
Prerequisites: EE301, EE302. The elements of probability theory. Continuous and discrete random variables. Characteristic functions and central limit theorem. Stationary random processes and auto correlation. Power density spectrum of a random process. Systems analysis with random signals. 3 credit hours.

EE437 Industrial Power Systems Engineering
Prerequisite: EE301. Study of the components forming a power system, its economic operation; symmetrical components and sequence impedance in the study of faults and load-flow studies. 3 credit hours.

EE438 Electric Power Transmission
Prerequisite: EE437. The fundamentals of electric generation, transmission and distribution. Transmission line analysis and performance, circle diagrams. Load-flow studies. Power system stability. 3 credit hours.

EE445 Communications Systems
Prerequisites: EE301, EE302. The analysis and design of communication systems. Signal analysis, transmission of signals, power density spectra, amplitude, frequency and pulse modulation. Performance of communications systems and signal to noise ratio. 3 credit hours.

EE450 Analog Filter Design
Prerequisites: EE301, EE348. Techniques in the analysis and design of active networks. First order active networks. Second order active networks. Design of Butterworth,, Chebyshev, Bessel-Thomson and Couer lowpass filters. Lowpass to bandpass, bandstop and highpass filter transformations. 3 credits.

EE453 Electrical Engineering Laboratory III
Prerequisite: Senior standing. Selected series of laboratory exercises and design projects covering aspects of electric power systems, communication systems, control systems, digital logic systems, microwave communication, and advanced electronic circuit applications. Laboratory Fee. 3 credits.

EE455 Control Systems
Prerequisite: EE302. Analysis of systems employing feedback. Performance criteria including stability. Design of compensation networks. Techniques of root locus, Routh-Hurwitz, Bode and Nyquist. Introduction to modern control theory including the concept of state. 3 credit hours.

EE463 Electromechanical Energy Conversion
Prerequisites: EE361, M204. Introduction to electromechanical devices, lumped parameter electromechanics; introduction to rotating machinery, equilibrium and stability, fields in moving matter; energy conversion dynamics. 3 credit hours.

EE465 Physical Electronics
Prerequisite: EE347. Principles and operation of semiconductor devices from the viewpoint of physical and internal characteristics. The course includes semiconductor LED's and lasers, microwave devices and 4 element semiconductor devices in general. The discussions extend to the design of VLSI chips from the LSI level. 3 credit hours.

EE475 Microprocessor Systems
Prerequisite: EE371. Microprocessors and their peripheral devices. Hardware and software aspects of interfacing. Complete system design using microprocessors. Introduction to advanced topics such as data communications, memory management and multiprocessing, as time permits. The course is structured around laboratory excercises. Computer Use Fee. 3 credit hours.

EE500 Special Topics in Electrical Engineering
Prerequisite: instructor's consent (may be repeated for credit). Open to seniors in electrical engineering. Special topics in the field of electrical engineering. Supervised independent study. Arranged to suit the interest and requirements of the student. Computer Use Fee (dependent upon topic). 3 credit hours.

EE504 Laboratory Thesis
Prerequisite: instructor's consent. Open to seniors in electrical engineering. Students must submit approved proposal. Advanced laboratory problems. Students work on problems of their selection with the approval of the instructor. 3 credit hours.

EE599 Independent Study
Prerequisite: Consent of faculty supervisor and approval of department chairman. Independent study provides the opportunity to explore an area of special interest under faculty supervision. May be repeated. 3 credit hours.

Engineering Science

ES103 Technology in Modern Society
Scientific and technological developments and their implications for the future of society. Prospects and problems in communications, energy sources, automation, transportation and other technologies. Use and control of technological resources for public benefit. 3 credit hours.

COURSES

ES 107 Introduction to Engineering
Prerequisite: M115 (may be taken concurrently). Overview of the problems, perspectives and methods of the engineering profession. Modeling of real world problems for purposes of optimization, decision making and design. Practical techniques of problem formulation and analysis. 3 credit hours.

English

Note: E105 and E110 are required by all departments in the university and must be taken during the student's first year at the university. They are also prerequisites for all upper-level English courses. Students who fail the Proficiency Examination may be helped by enrolling in E250 and/or utilizing the Center for Learning Resources.

E101 Reading Strategies
Reading, analyzing, and interpreting non-fiction for the purpose of learning to comprehend textbooks. 1 credit hour. Laboratory Fee.

E103 English Fundamentals
Students doing excellent work in E103 may be nominated by the instructor to take E110 rather than E105 as a follow-up. Designed to increase awareness of the structure of English. Intensive practice in writing to improve the student's ability to construct effective sentences, paragraphs, and short themes. 3 excess credit hours, 6 class hours per week. See section Developmental Studies program.

E104 English Fundamentals
For international students. Same course description as for E103.

E105 Composition
Prerequisite: satisfactory grade on English placement test or E103. Analytical study of essays for the purpose of improving skills of written communication. Practice in writing in a variety of rhetorical modes with emphasis upon clarity and precision. 3 credit hour.

E106 Composition
For international students. Same course description as for E105.

E110 Composition and Literature
Prerequisite: E105 or placement by the English department. Reading, analyzing, and interpreting literature in three basic genres: fiction, poetry, and drama. Writing of analytical and critical essays. Theater fee for day sections. 3 credit hours.

E111 Composition and Literature
For international students. Same course description as for E110.

E114 Oral Exposition
A disciplined approach to oral communication for freshmen. Objectives are to develop proficiency in locating, organizing and presenting material and to help the student gain confidence and fluency in speaking extemporaneously. Students beyond the freshman year should take E230. 3 credit hours.

E200 Speedreading
A course to increase reading speed and improve memory and cognitive skills. Laboratory Fee. 1 credit hour.

E201 Literary Heritage I
Selected translations of European prose, poetry and drama from Homer through the Middle Ages. 3 credit hours.

E202 Literary Heritage II
Selected translations of prose, poetry, and drama from the Renaissance to the twentieth century. 3 credit hours.

E211 British Writers I
A study of important British writers from the beginning of literature in English through the Neoclassic era. 3 credit hours.

E212 British Writers II
A study of important British writers from the Romantic era to the present. 3 credit hours.

E213 American Writers I
A study of important American writers from Colonial times to the 1850s. 3 credit hours.

E214 American Writers II
A study of important American writers from the 1860s to the present. 3 credit hours.

E220 Writing for Business and Industry
Prerequisite: E105. Intensive practice in the various types of writing required of executives, businessmen, engineers and other professionals, with emphasis on business letters, resumes, internal and external reports, evaluations and recommendations, descriptions of procedures and processes. 3 credit hours.

E225 Technical Writing and Presentation
Intensive practice in the common forms of technical writing, with emphasis on technical description and the writing of reports and manuals. Oral presentation of written work. 3 credit hours.

E230 Public Speaking and Group Discussion
Objectives are to develop proficiency in organizing and presenting material, and to give practice in speaking, group interaction, conference management and small group discussion. 3 credit hours.

E250 Expository Writing
Intensive practice in writing that explains. Emphasis on gathering information, establishing credibility, and attaining clarity, coherence, and point. 3 credit hours.

E260 The Short Story
A critical study of the best stories of American and British writers as well as stories, in translation, of writers of other nationalities. 3 credit hours.

E261 The Essay
Writing of several types of essays; study of contemporary essays and great essays of the past. Particular attention paid to organization, methods of development, and style. 3 credit hours.

E267 Creative Writing I
Imaginative exploration of both prose and verse; practice in writing various short forms of each; particular attention to concrete imagery, clarity of thought and the development of style. 3 credit hours.

E268 Creative Writing II
Emphasis on the elements of short fiction and drama; secondary attention to related forms. 3 credit hours.

E270 Forms of Contemporary Culture
A study of contemporary culture in a variety of forms, including drama, films, TV, periodicals, music, art. Students will be expected to attend performances and exhibitions. The goal of the course is to give the student a better understanding of the scope and meaning of contemporary cultural phenomena and to further the development of the critical sensibility. 3 credit hours.

E275 Film Studies
A consideration of significant full-length feature films selected to represent a national school of filmmaking, a genre, the respective crafts of directors, performers or script writers. Films will be shown in class and studied at the rate of about one a week. 3 credit hours.

E281 Science Fiction
A survey of the development of science fiction during the nineteenth and twentieth centuries. Reading of American, English and European science fiction novels and short stories. 3 credit hours.

E290 The Bible as Literature
A study of literary genres in the Bible: narrative, drama, poetry, wisdom literature, books of prophecy, letters. Extensive readings in both the Old and New Testaments. Emphasis on the King James version, the "noblest monument of English prose." 3 credit hours.

E302 History of the English Language
The structure and development of English, including Indo-European origins and elements of Anglo-Saxon. Emphasis on Middle English. Study of the distinctive coinages of American English. 3 credit hours.

E323 The Renaissance in England
Major writers of the English Renaissance, in poetry and prose, from Wyatt and Surrey in the early sixteenth century through Sidney and Spenser to Donne and Milton. 3 credit hours.

E341 Shakespeare I
An analysis of representative history plays, early comedies and tragedies. 3 credit hours.

E342 Shakespeare II
An analysis of representative later plays. 3 credit hours.

E353 Literature of the Romantic Era
Poetry and prose of the major Romantics—Wordsworth, Coleridge, Byron, Shelley, Keats, Lamb, and Hazlitt—with attention given to the milieu of the writers, the Continental background and theories of Romanticism. 3 credit hours.

E356 Later Nineteenth-Century English Literature
Poetry and prose from 1830-1900. The works of Tennyson, Browning, Arnold, Carlyle, Mill, Newman, Ruskin and others studied in the light of the social, political and religious problems of the period. 3 credit hours.

E361 Modern British Literature
British fiction, drama and poetry from 1900 to the present. May include works of Conrad, Joyce, Lawrence, Woolf, Huxley, Forster, Shaw, Yeats, Auden, Spender and Dylan Thomas. 3 credit hours.

E362 The Age of Donne and Milton
Major writers of prose and poetry during the period 1600-1660: Donne, Milton, Burton, Bacon, Herbert and others. 3 credit hours.

E371 Literature of the Neoclassic Era
British writers of the period 1660-1789, with emphasis upon Dryden, Pope, Swift and Johnson. 3 credit hours.

E375 The Age of Chaucer
A detailed reading and critical study of Chaucer's *Canterbury Tales*, with some study of his predecessors and the medieval cultural milieu. 3 credit hours.

E390 The English Novel I
The development of the novel in England from Defoe to Dickens and Thackeray. 3 credit hours.

E391 The English Novel II
The development of the novel in England from George Eliot and Hardy to the present. 3 credit hours.

E392 Poe, Hawthorne and Melville
A study of the poetry and fiction of the major representatives of the tragic outlook on life in mid-nineteenth century American literature. Poe, Hawthorne and Melville. 3 credit hours.

E395 American Realism and Naturalism
Readings in the works of such major realists as Howells, Twain and James and important naturalist successors such as Frank Norris, Stephen Crane and Theodore Dreiser. 3 credit hours.

COURSES

E402 Modern Poetry
A study of the works of representative twentieth-centry British, American and Continental poets. 3 credit hours.

E405 Modern Drama
Principal movements in Continental, British and American drama from Ibsen to the present. 3 credit hours.

E406-409 Continental Literature
Selected poetry, drama and fiction, in translation, of the European masters, primarily Russian, French, German or Spanish. Topic to be announced for each semester. 3 credit hours each course.

E477 American Literature Between World Wars
A study of the achievements of the main figures of the heroic generation that flourished between the two world wars and brought about "America's Coming of Age." Poets Ezra Pound, T.S. Eliot, Robert Frost, Wallace Stevens and William Carlos Williams; novelists Hemingway, Faulkner, Fitzgerald. 3 credit hours.

E478 Contemporary American Literature
Intensive study of recent American fiction, non-fiction, poetry and drama. 3 credit hours.

E480 Internship
A work experience, arranged through the department, that will require the effective use of written or spoken English.

E481-498 Studies in Literature
Special topics in literature, which may include a concentration upon a single figure, a group of writers or a literary theme. 3 credit hours each course.

E599 Independent Study
Prerequisites: consent of the instructor and the chairman of the department; restricted to juniors and seniors who have at least a 3.0 quality point ratio. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester.

Finance*

FI113 Business Finance
Prerequisites: A112, EC134, QA118. An introduction to the principles of financial management and the impact of the financial markets and institutions on that managerial function. An analytical emphasis will be placed upon the tools and techniques of the investment, financing and dividend decision. In addition, the institutional aspects of financial markets, including a description of financial instruments, will be developed. 3 credit hours.

FI214 Principles of Real Estate
Prerequisite: FI113. An introduction to the fundamentals of real estate practice and the essentials of the various aspects of the real estate business. Emphasis will be placed on brokerage, mortgage financing, investments, management and valuation relative to commercial and industrial real estate. 3 credit hours.

FI227 Risk and Insurance
Prerequisite: FI113. An examination and evaluation of risk in business affairs and the appropriate methods for handling them from the viewpoint of the business firm. Emphasis will be placed on, and extended consideration devoted to, the various forms of insurance coverage. 3 credit hours.

FI229 Corporate Financial Management
Prerequisites: FI113, QA216. A comprehensive analysis of the structure of optimal decisions relative to the functional areas of corporate financial decision making. Emphasis is placed upon developing an understanding of the applications and limitations of decision models for the investment, financing and dividend decisions of the corporation. Topics include: firm valuation, capital budgeting, risk analysis, cost of capital, capital structure and working capital management. 3 credit hours.

FI230 Investment Analysis and Management
Prerequisites: FI113, QA216. An analysis of the determinants of valuation for common stocks, preferred stocks, bonds, convertible bonds and preferred stock, stock warrant and puts and calls. Emphasis will be placed on the analytical techniques of security analysis, portfolio analysis and portfolio selection. 3 credit hours.

FI325 International Finance
Prerequisite: FI113. An introduction to the theory and determination of foreign exchange rates, mechanisms of adjustment to balance of payments disturbance, fixed vs. flexible exchange rates. The international reserve supply mechanism and proposals for reform of the international monetary system. 3 credit hours.

FI341 Financial Decision Making
Prerequisites: FI229, FI230, QA333. An examination of the conceptual foundations underlying portfolio theory, capital market theory and firm financial decision making. Emphasis will be placed on an integrated analysis of firm financial decision making under varying conditions of certainty and capital market perfections. 3 credit hours.

FI345 Financial Institutions and Markets

Prerequisites: FI113, QA216. An examination of the relationship between the financial system and the level, growth and stability of economic activity. Emphasis will be placed upon the theory, structure and regulation of financial markets and institutions, coupled with the role of capital market yields as the mechanism that allocates savings to economic investment. 3 credit hours.

*Note: Due to expanding use of computing capabilities, a computer use fee may be charged in any finance course.

Fine & Applied Art

(See Art)

Fire Science

FS105 Municipal Fire Administration

This course delineates the fire safety problem, explores accepted administrative methods for getting work done, covers financial considerations, personnel management, fire insurance rates, water supply, buildings and equipment, distribution of forces, communications, legal considerations, fire prevention, fire investigation, and records and reports. Course content is designed for individuals involved in either public or private fire protection systems as well as those in safety or insurance. 3 credit hours.

FS106 Fire Strategy and Tactics

A study of the responsibilities and operating modes of officers commanding fire department units, including engine, ladder and rescue companies. Initial evaluation of the problems confronting first arriving units. Outline of particular problems encountered in various types of occupancies and buildings. Stress on safety of the operating forces as well as of the public. Standpipe and sprinkler system utilization. Overhauling operations. 3 credit hours.

FS201 Essentials of Fire Chemistry with Laboratory

The examination of the chemical requirements for combustion, the chemistry of fuels and explosive mixtures and the study of the various methods of stopping combustion. Analysis of the properties of materials affecting fire behavior. Detailed examination of the basic properties of fire. Laboratory Fee. 4 credit hours.

FS202 Principles of Fire Science Technology

This course is an introduction to the science of public fire protection with a review of the role, history and philosophy of the fire service in the United States. It includes career orientation and a discussion of current and future problems in public fire protection. 3 credit hours.

FS207 Fundamentals of Fire Prevention

This course considers fire loss, investigation standards, laws, engineering, chemistry and physics as related to those persons entering into or already employed in the various branches of the fire service. It will also consider the fire and safety problems involved in storage and handling of specific hazardous materials. 3 credit hours.

FS208 Instructor Methodology

A study of the methods and techniques of teaching fire safety and security to public safety and industrial employees. The use and development of visual aids and actual teaching demonstrations will be included. 3 credits.

FS301 Building Construction, Codes and Standards

The various types of construction materials and their properties with emphasis on the effect of heat, water, and internal pressures generated under fire conditions. Familiarization with national, state, and local ordinances and codes which influence the fire protection field. 3 credit hours.

FS303 Fire Protection Fluids and Systems

Chemical properties of fluids used in fire suppression systems and operations. Design of water supply and distribution for fire protection. Laboratory study of operational and hydraulics problems. 3 credit hours.

FS304 Fire Detection and Control

Heat, sensitivity, thermostats, fusible elements, fire detection systems, designs and layouts, alarm systems, power sources, safeguards, municipal alarm systems, construction, installation and maintenance requirements, standards and codes. Automatic extinguishing systems, design and layout of water, gas and power systems. 3 credit hours.

FS306 Fire and Casualty Insurance

This course will examine the institution of fire insurance in the United States since it is the primary means of minimizing the economic consequences of property fire damage. 3 credit hours.

FS308 Industrial Fire Protection I

A study of fire hazards and potential fire causes in business and industry with critical analysis of private protection measures available to reduce loss potential. 3 credits.

FS309 Industrial Fire Protection II

An exploration of management and organizational principles with emphasis on industrial fire inspections, fire brigades, equipment and OSHA regulations dealing with industrial fire brigades. 3 credits.

FS402 Arson Investigation

An analysis of incendiary fire investigations from the viewpoint of the field investigator with an emphasis on the value of various aids and techniques in the detection of arson, collection and preservation of evidence, investigation, interrogation, related laws of arson, court appearances, and testimony. There will be a discussion of case study illustrations. 3 credit hours.

COURSES

FS 403 Process and Transportation Hazards
Special hazards of industrial processing, manufacturing and the transportation of products and personnel. Analytical approach to hazard evaluation and control. Reduction of fire hazards in manufacturing processes. 3 credit hours.

FS 404 Special Hazards Control
Types of industrial processes requiring special fire protection treatment such as heating equipment, flammable liquids, gases and dusts. Emphasis on fundamental theories involved, inspection methods, determination of relative hazard, application of codes and standards and economics of installed protection systems. 3 credit hours.

FS 405 Fireground Management
A study of the effective management of suppression forces at various fire situations. Includes consideration of pre-fire planning, problem identification and solution implementation. Case studies of actual and theoretical fire incidents, command control concepts, maximum utilization of forces available, priorities of action and logistics at large-scale operations will be covered. 3 credit hours.

FS 406 Arson Investigation II
Prerequisite: FS402. An advanced course showing the principles and methods of investigation involving the techniques needed for the investigation of gas fires, automobile and boat fires, electrical fires, explosions and bomb scene investigation. 3 credit hours.

FS 407 Arson Investigation II Laboratory
This course consists of experiments dealing with FS406. Laboratory Fee. 1 credit hour.

FS 408 Fire Protection Law
A study of law in relation to fire protection, liability of personnel, civil service, the search of the fire scene and criminal law related to arson and arson arrests. 3 credits.

FS 498-499 Research Project
One lecture per week in FS498; credit—1 credit hour. One lecture and one laboratory session per week in FS499; credit—2 credit hours. Development of a student project and a written report in a specified area in fire administration or fire science technology with faculty supervision. Grade awarded upon completion of project. This is a two-semester course with FS498 as prerequisite for FS499. 3 credit hours over two-semester period.

FS 500 Selected Topics
Selected topics in fire science on a variety of current problems and specialized areas not available in the regular curriculum. 3 credit hours.

FS 501 Internship
Prerequisite: Consent of the director of the fire science program. This program provides monitored field experience with selected agencies subject to academic guidance and review. 3 credits.

FS 599 Independent Study
Prerequisites: consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 12.

French

FR 101-102 Elementary French
Stresses pronunciation, aural and reading comprehension, basic conversation and the fundamental principles of grammar. 6 credit hours.

FR 201-202 Intermediate French
Prerequisites: FR101-102 or equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to do some reading in their own areas of interest. 6 credit hours.

FR 301-302 Main Currents of French Literature
Prerequisites: FR201-202 or equivalent. Reading of significant writers of French literature from the Middle Ages to the twentieth century. 6 credit hours.

German

GR 101-102 Elementary German
Stresses pronunciation, aural and reading comprehension, basic conversation and the fundamental principles of grammar. 6 credit hours.

GR 103 Conversational German
A bilingual course for basic understanding of German conversational patterns, the land and the people. 3 credit hours.

GR 201-202 Intermediate German
Prerequisites: GR101-102 or the equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Texts used in the course are selected from many areas of study, including physics, biology and chemistry. Students are encouraged to read in their own areas of interest. 6 credit hours.

History

HS 101 Foundations of the Western World
Traces the course of western civilization from its earliest beginnings in the ancient Middle East down to the eighteenth century. Includes major cultural trends, interactions between society and economy and analysis of the rise and fall of empires. 3 credit hours.

HS 102 The Western World in Modern Times
Europe and its global impact from the eighteenth century to the present. Includes revolutionary movements, the evolution of mass democracy and the world wars of the twentieth century. Not open to those who have had HS106. 3 credit hours.

HS 105 Foundations of Economic History
A survey of the economic history of the western world from the earliest civilizations to the advent of industrialization in Europe. Includes discussion of the ancient economy, the commercial revolution and the impact of European colonization. 3 credit hours.

HS 106 Modern Economic History
Economic development of the industrialized world in the nineteenth and twentieth centuries. Includes United States, Europe, Japan. Special emphasis will be given to the social and cultural impact of economic changes. Not open to those who have had HS 102. 3 credit hours.

HS 108 History of Science
The development of science and technology from antiquity to the present. Their impact on society and the world. 3 credit hours.

HS 110 American History Since 1607
A one-semester survey course, covering such major topics as colonial legacies, the American Revolution, nation-state building, sectional tensions, urbanization, industrialization, the rise to world power status, social and cultural developments and post-World War II. Not open to those who have had HS 211 or 212. 3 credit hours.

HS 120 History of Blacks in the United States
The history and background of Black people in the United States. Social, political and cultural development. 3 credit hours.

HS 204 History of Sport and Leisure
A survey of the history of sport and leisure in the United States with some comparative study of Europe and non-Western cultures. Topics include the rise of professional sports and decline of amateurism, legal and political aspects of sports, and the commercialization of leisure. Offered spring semester of even-numbered years. 3 credit hours.

HS 207 World History since 1945
Survey of major events and trends since World War II. Advanced industrial societies are emphasized. Includes decolonization, East-West conflicts and patterns of economic cooperation and competition. Offered fall semester of even-numbered years. 3 credit hours.

HS 211 United States to 1865
Survey of American social, economic, political and diplomatic developments from Colonial times to 1865. Not open to those who have had HS 110. 3 credit hours.

HS 212 United States since 1865
Survey of American history from 1865 to the present. Institutional and industrial expansion, periods of reform and adjustment. The U.S. as a world power. Not open to those who have had HS 110. 3 credit hours.

HS 223 United States Diplomatic History
The ideas, trends and interpretations of U.S. diplomacy from the American Revolution to the present. 3 credit hours.

HS 260 Modern Asia
The ideological, cultural and traditional political, economic and diplomatic history of East, South and Southeast Asia from the sixteenth century to the present. 3 credit hours.

HS 311 Colonial and Revolutionary America to 1789
The cultural and political background of British North America, Colonial and Revolutionary America. The creation of a republican society. 3 credit hours.

HS 312 United States in the Twentieth Century
The interaction of political, economic, social, intellectual and diplomatic events and their impact upon twentieth century America. 3 credit hours.

HS 322 United States Social and Intellectual History
The ideological, cultural and social development of the American people. The impact of ideas on American life. 3 credit hours.

HS 341 Ancient Greece and Rome
The rise and decline of ancient Greece and Rome. Institutions and ideas that have shaped Western civilization. 3 credit hours.

HS 343 Renaissance and Reformation Europe
Europe from 1300 to 1650; from feudal state to nation state; religious unity to diversity. 3 credit hours.

HS 344 Europe in the Seventeenth and Eighteenth Centuries
The cultural, political and economic life of Europe from classicism to the Napoleonic period; the Enlightenment. 3 credit hours.

HS 345 Europe in the Nineteenth Century
European history from the Napoleonic period to World War I; its internal development and world impact. 3 credit hours.

HS 349 Modern European Intellectual History
The intellectual, scientific and social thought from the Enlightenment to the present. The influence of ideologies on modern thinking. 3 credit hours.

HS 351 Russia and the Soviet Union
The development of czarist Russia from 1200 to the Revolution of 1917; the U.S.S.R. from 1917 to the present. Offered spring semester of even-numbered years. 3 credit hours.

HS 353 Modern Britain
The development of British history from the Restoration of 1660 to the present. Includes Britain's role in international affairs. Special emphasis on social and economic topics. Offered fall semester of odd-numbered years. 3 credit hours.

COURSES

HS 355 Modern Germany
German civilization from the seventeenth century to the present; its impact on Europe and the world. 3 credit hours.

HS 381-389 Selected Studies in History
Special topics in history dealing with the modern world. A study in depth of vital historical issues. 3 credit hours.

HS 446 Europe in the Twentieth Century
Recent and contemporary European history beginning with World War I. Institutional development and its changing role in world politics. 3 credit hours.

HS 461 Modern China
The ideological, cultural and historical background of China. The imperial order, Kuominatang and the Communist revolution to the present. 3 credit hours.

HS 466 Modern Japan
The institutional and cultural traditions of Japan. The feudal period and subsequent modernization, postwar political, economic and cultural transformations. 3 credit hours.

HS 490 Historiography
A survey of European and American historical thought, historical methods and contemporary historical writing. 3 credit hours.

HS 491 Senior Seminar
The undertaking of an independent study and research project. Required of all history majors in their senior year. 3 credit hours.

HS 599 Independent Study
Prerequisite: consent of faculty member and chairman of department. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 6.

Hotel and Restaurant Management

HR 100 Introduction to the Hospitality Industry
An introduction to the various operations within the hospitality industry, with special emphasis on current trends in hotel/restaurant management and operations. 3 credit hours.

HR 200 Volume Food Production and Service I
Introduction to the fundamental concepts, skills and techniques of basic food preparation and baking. Special emphasis is given to the study of ingredients, cooking theories, terminology, equipment, technology, weights and measures, formula conversion and procedures. Instruction will include: experimental hands-on preparation, demonstration and lecture. 3 credit hours. Laboratory fee.

HR 202 Volume Food Purchasing
Introduction to the purchasing, receiving and issuing of foods and food items. The identification of guides, preparation of specifications and cost control procedures are stressed. Field trips are required. 3 credit hours.

HR 204 Volume Food Production and Service II
Prerequisites: HR 200, HR 202, HR 325. This course examines menu planning and quantity recipes standardization integrated with techniques, methods, principles and standards of volume food production and service. Supporting areas such as volume receiving, storage, sanitation, safety and equipment, and the phases of organization involved in the preparation and service of volume foods for large groups. Students assume responsibility for planning, purchasing, preparing and obtaining the food and labor cost for each preparation. Laboratory experiences are provided for quantity food production and service to the public. Laboratory Fee. 3 credit hours.

HR 210 Hotel Front Office Systems
Prerequisite: HR 100. An introduction to the work flow connected with front office procedures. Preparation of the night audit; an introduction to the art of innkeeping. 3 credit hours.

HR 212 Laws of Innkeeping
Prerequisite: HR 100 or consent of the instructor. The historical development of the common inn. Innkeeper/guest relationships, responsibilities of the innkeeper, and use of the innkeeper's lien. 3 credit hours.

HR 215 Supervised Field Experience I
Prerequisite: Consent of the instructor. 250 hours of field work in hotels, restaurants, institutions or clubs. The field experience will emphasize marketing techniques, and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

HR 217 Supervised Field Experience II
Prerequisite: Consent of the instructor. 250 hours of field work in hotels, restaurants, institutions or clubs. The field experience will emphasize selected aspects of personnel management, and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

HR 219 Supervised Field Experience III
Prerequisite: Consent of the instructor. 250 hours of field work in hotels, restaurants, institutions or clubs. The field experience will emphasize accounting procedures, and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

HR 221 Supervised Field Experience IV

Prerequisite: Consent of the instructor. 250 hours of field work in hotels, restaurants, institutions or clubs. The field experience will emphasize computer applications and cost control procedures and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

HR 300 Special Topics

The hotel and food service fields are constantly changing due to new technology and avenues for their expansion and management. The purpose of these courses is to select special topics that are not covered in existing courses and expose the students to recent developments and future research in the following specific courses. All selected courses will be offered in the fall, spring, and summer semesters.

HR 300 Club Operations and Management

The management of the private club environment contrasted with the traditional profit-motivated segments of the hospitality industry will be emphasized. Organization and operation of clubs including special problems in social and recreational aspects, membership and taxes will also be included. 3 credit hours.

HR 300 Club Property Management

Basic principles of graphic communication as a management tool are covered as they relate to private club property management. Physical plant organization and spatial relationships common to private clubs are stressed. 3 credit hours.

HR 300 Club Banquet Management

In-depth anaylsis of the management problems involved in selling, organizing and servicing club banquets. 3 credit hours.

HR 300 Introduction to Club Management

A survey of the history, organizational structure and future direction of the private club industry. 3 credit hours.

HR 300 Private Club Administration

Design, analysis and evaluation of private club administration systems and operations. Emphasis is placed on analytical techniques, model building and computer-assisted club operations. 3 credit hours.

HR 300 Committee Policies and Procedures in Club Management

Current policy and procedure topics in club management will be stressed. Rules, regulations, legal aspects and board involvement outlining club policy and procedures will also be emphasized. 3 credit hours.

HR 300 Hotel Security

An examination of the current state of the art security systems used in the hospitality industry. Theft control, vandalism, guestroom security and management solutions will be discussed. 3 credit hours.

HR 300 Bar Management

Emphasis in this course is placed on the product and the manager's role and responsibilities in developing and operating a facility serving alcoholic beverages. Maximum sales potential through use of existing facilities is stressed. Laboratory Fee. 3 credit hours.

HR 300 Wine Appreciation

This course considers the major wines and wine regions of the world, with special emphasis on American, French, German, Italian and Spanish products. Evaluation by tasting is an integral part of the course. Laboratory Fee. 3 credit hours.

HR 300 Casino Management

Practices and problems associated with casino management are discussed; staffing, security and control, taxation and entertainment policies are included. 3 credit hours.

HR 300 Energy Management in the Hospitality Industry

The control and operation of energy-related systems in the hotel, restaurant, club, and institutional operation will be a focal point. Heating, lighting, and general maintenance systems will be thoroughly investigated. 3 credit hours.

HR 300 Meat Selection and Grading

This course deals with the major categories of beef, veal, lamb, and pork products from hotel, restaurant, club, and institutional standpoints. Nutritive value, structure and composition, sanitation, selection and purchasing, cutting, freezing, portion control and miscellaneous topics are covered. Laboratory Fee. 3 credit hours.

HR 300 Ski Resort Management

Principles of modern ski resort management as they pertain to staffing, controlling, directing and organizing an efficient and profitable ski resort will be emphasized. Seasonality, ski-lift design, food and beverage operations, equipment rentals and recreational facilities will be discussed. 3 credit hours.

HR 300 Resort Management

Emphasis upon recreation aspects, concession-stand management, outdoor activities and overall hotel resort management policies are stressed. The course will focus more generally upon the unique problems of resort hotel management and the application of special techniques to meet these problems. 3 credit hours.

COURSES

HR 300 Historical Inns of Connecticut/New England
An examination and survey of the most reputable and profitable country inns throughout Connecticut and New England. Their historical development, attributes of longevity and management structure are emphasized. Field trips are required. 3 credit hours.

HR 300 Grand Hotel
An examination of the characteristics of the great hotels which established service goals for the industry. The course will survey development of the European and American palace hotels, the spa hotel, resort hotels and the small luxurious hotels. Particular attention will be paid to the contributions of famous chefs and managers, developments in hotel architecture, social events and public relations mechanisms, especially identification with famous personalities. Implications of this tradition for modern large hotels will be explored. 3 credit hours.

HR 300 Convention Bureau Management
An in-depth analysis of local, state and national convention bureaus and how they contribute to the economic and social stability of a community. Ways in which their efforts are coordinated with the hospitality industry will also be stressed. 3 credit hours.

HR 300 Computer Systems in the Hotel and Restaurant Industry
An introduction to information systems and computing machines within the hotel and restaurant industry. Students learn keypunching and programming skills for application to selected business problems. Programs will be executed on the university's computer. 3 credit hours.

HR 300 Food Service and Lodging Study Tours
Food service and lodging tours will be organized for academic credit. Domestic and/or international food service and lodging properties will be evaluated by students on a comparative basis. Management styles of operation will be scrutinized. 3 credit hours.

HR 300 Garde Manger
Students will be instructed in the practice of food embellishment and garnishing techniques adaptive to hotel and restaurant service. Special emphasis is placed upon meats, vegetables, salads, breads, cake decorations, hors d'oeuvres and desserts. Students will be evaluated on the merits of their ability to prepare selected food garnishes. Laboratory Fee. 3 credit hours.

HR 300 Pastry and Dessert Preparation
Emphasis is placed upon the techniques, preparation and presentation of pastries and desserts. Students will be evaluated on the merits of their ability to prepare selected desserts and pastries. Laboratory Fee. 3 credit hours.

HR 300 Franchising in the Hospitality Industry
A course designed to cover the specific steps involved in developing a franchise operation from the viewpoint of both the franchisor and the franchisee. Feasibility studies, real estate, plans and project costs, financing project analysis, corporate structure and operations are some of the topics to be studied. 3 credit hours.

HR 300 Hospitality Investment Management
A survey of investment opportunities and the methods of analysis used by business and the individual to determine the best use of investment funds. Special emphasis is placed on the stock and bond markets, including security portfolio management. 3 credit hours.

HR 300 Hotel, Restaurant and Institutional Financial Analysis and Budgeting
Prerequisite: HR 321. An examination of the financial statements of several types of businesses in the hospitality industry. The methods of analysis are discussed, including cash budgeting, forecasting of revenue and expenses, capital expenditure planning and break-even point studies. The case study method will be used. 3 credit hours.

HR 300 Internal Control in Hotels
Discussion of the problems encountered in distributing the accounting and clerical work in hotels so as to provide a good system of internal control. Study of many actual cases on the failure of internal control and the analysis of the causes of the failure. Practical problems and actual techniques of functioning systems of internal control. 3 credit hours.

HR 300 Financial and Tax Aspects of the Leisure Time Industries
Financial and tax considerations associated with the acquisition, expansion and diversification of industries providing products and services for leisure time pursuits. Phases include the macroeconomics and microeconomics of the leisure time industries and the financial, tax and accounting considerations ations in acquisitions and mergers. 3 credit hours.

HR 300 Management of a Retail Food Service Operation
Supervision of food preparation and service in a retail operation is taught using university food services. Student managers are responsible for the preparation and service of foods which meet an institutional menu for two cafeterias. The preparation of foods for dining room, private function, and banquet menus is also controlled by the student managers as they rotate through the various preparation units. Quality and cost of foods presented to consumers are stressed. An integral part of the course involves coordination and cooperation with visiting professional chefs. Lectures and seminars in the theory and practice of management accentuate the practical management experience in the laboratories. 3 credit hours.

HR 300 Survey of Convenience Foods
Methods of food preservation are reviewed with special emphasis on the place of prepared foods in the commercial food operation. The student serves and evaluates prepared hors d'oeuvres, salads, soups, entrees, desserts and vegetables from the standpoints of quality, cost and menu adaptability. 3 credit hours.

HR 300 Catering for Special Functions
The systematic presentation of catering for special functions. Emphasis is placed on maximum sales potential through use of existing facilities. Lectures and demonstrations on banquet layout, menus, service and sales. 3 credit hours.

HR 300 Introduction to Properties Management
Basic principles of graphic communication as a management tool for problem solving are covered in this course, which includes drafting fundamentals and also the interpretation of both presentation and technical drawings. Principles of site analysis and site planning, physical plant organization and internal spatial relationships common to hotel and restaurant properties are stressed. 3 credit hours.

HR 300 Food Facilities Programming, Planning and Design
Lectures and laboratory deal with first-stage planning, which must be done by the owner or his consultant in the programming for any project of mass feeding. The many factors which must be programmed in order to satisfy all principal objectives are outlined: site selection, market analysis, kind of operation, merchandising program and surveys to determine the wants and needs of patrons to be served. Also included are research studies to resolve menu requirements, to plan for the particular type of service to be employed, to create desired atmosphere to program functions of personnel, to plan maintenance, analyze administrative objectives and to develop the major prospectus. Pro forma studies and feasibility studies research round out the coverage. 3 credit hours.

HR 300 Baking
The art and science of applying baking principles in food service and institutional settings is emphasized. Students will be evaluated on the merits of their baking abilities. Laboratory Fee. 3 credit hours.

HR 300 Hotel, Restaurant and Institutional Computer Applications
Prerequisites: CS 107. A survey of the computer systems used in the hospitality industry. The major emphasis will be on software packages and their impact on the management process. Laboratory Fee. 3 credit hours.

HR 300 Hotel, Restaurant and Institutional Uniform System of Accounts
Prerequisite: HR 321. Deals with the generation and analysis of quantitative information for the purpose of planning, control and decision making by managers at various levels in hospitality industry operations. Emphasis is placed on the need for and use of timely and relevant information as a vital tool in the management process. 3 credit hours.

HR 300 Hotel, Restaurant and Institutional Maintenance and Engineering
Emphasis will be placed on hotel and restaurant mechanical and electrical equipment, utilities and energy conservation. Examination is placed on the management of these services in hotel and restaurant operations. 3 credit hours.

HR 300 Hotel, Restaurant and Institutional Computer System Design
Prerequisites: CS 107. Advanced programming topics will be covered, computer system feasibility studies, and the designing of a computer system. Laboratory Fee. 3 credit hours.

HR 300 Hotel Restaurant and Institutional Marketing Strategies
Prerequisite: HR 322. Deals with strategic marketing, the concept and the process; techniques will be analyzed for conducting sales blitzes, planning, target marketing, positioning strategy and advertising. 3 credit hours.

HR 300 Principles of Hotel and Restaurant Management
Prerequisite: HR 100. An introduction to the theories and principles of organizational/managerial decision making and the management process as it relates to the hospitality Industry. 3 credit hours.

COURSES

HR300 Sanitation and Safety in the Hospitality Industry
The causes and prevention of food poisoning and accidental occurrences in the hospitality industry are stressed. Emphasis is placed on the current problems confronting the industry, with recent developments as they relate to sanitation and safety. Guidelines formulated by the National Sanitation Foundation and the Occupational Safety and Health Administration will be presented. 3 credit hours.

HR304 Cultural Understanding of Foods and Cuisines
Prerequisites: HR200, HR202, HR204, HR322, HR325. This course examines foods, including the culinary highlights and the historical and social implications of the foods of selected countries and regions. In addition to the preparation of many foods, which will be based on the components of menus and nutritive values, this course will trace the development of traditional cookery, eating customs, special serving techniques, and the mastery of unusual food production techniques and equipment. Laboratory experiences are provided with service to the public. Laboratory Fee. 3 credit hours.

HR321 Hotel, Restaurant, and Institutional Food Service Accounting and Auditing Procedures
This course deals with financial accounting principles and practices for the hospitality industry. The Uniform System of accounts of the American Hotel and Hotel Association will be followed. 3 credit hours.

HR322 Marketing and Sales Promotion for the Hospitality Industry
Prerequisite: HR100. An analysis of aspects of the services market with emphasis on hotel and restaurant marketing. Internal and external stimulation of sales in competitive and non-competitive markets; vagaries of environmental concepts; experimental techniques in industry-sponsored salesblitz activities. 3 credit hours.

HR325 Food and Labor Cost Controls
Prerequisites: HR100, HR202, HR321. Current methods and principles of food and beverage control and labor cost controls for hotels, restaurants and institutions. Emphasis will be placed on food and beverage cost control techniques. 3 credit hours.

HR326 Personnel Management in the Hospitality Industry
Techniques and philosophies of personnel management as applied to various types of hospitality operations. 3 credit hours.

HR330 Institutional Environmental Services and Housekeeping
This course examines environmental and housekeeping services in public and private institutions. Emphasis is place on the management of these services in educational and health care institutions and on the selection of materials, chemicals, equipment and labor to provide these services in a cost-quality manner. 3 credit hours.

HR410 Systems and Operations
Design, analysis and evaluation of hotel, restaurant and institutional food service administration systems and operations. Emphasis is placed upon analytical techniques and case study analysis. 3 credit hours.

HR411 Food Service Equipment and Layout Design
A study of building management, stressing the interdependence of planning, construction, equipment, maintenance, personnel and service to the on-premise customer. Layout studies, equipment design and budget estimation are studied. 3 credit hours.

HR510 Supervised Field Experience V
Prerequisite: Consent of the instructor. 250 hours of field work in hotels, restaurants, institutions or clubs. The field experience will emphasize food, labor and management applications and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

HR512 Seminar in Hospitality
Current topics and developments within the hospitality industry: food service, lodging, clubs, institutions and tourism. Senior status or consent of the instructor is required. 3 credit hours.

HR598 In-process Registration for Cooperative Education Program (Co-op)
Prerequisite: Permission of the department co-op adviser. The adviser works closely with the student in designing a plan of study that integrates full-time work experience and academic study within the student's academic major and area of interest. Non-credit, but may be used in conjunction with other appropriate credit courses.

HR599 Independent Study
Prerequisite: Permission of the department chairman. Independent research projects or other approved phases of independent study. 3 credit hours.

Industrial Engineering

IE204 Engineering Economics
Prerequisite: M116 or M117. A quantitative analysis of applied economics in engineering practice; the economy study for comparing alternatives; interest formulae; quantitative methods of comparing alternatives; intangible considerations; selection and replacement economy for machines and structures; break-even and minimum cost points; depreciation; effect of income taxes on the economy study; review of current industrial practices. Promotes logical decisions through the consideration of alternative courses of action. 3 credit hours.

IE214 Engineering Management
Provides insight into the elements of the managerial process and develops a rational approach to the problem of managing productive processes and the engineering function. Focusing largely upon the complex problems of top- and middle-level management, this course investigates the modern tools that managers use under given circumstances, yet stresses the ongoing activities of management as part of an integrated, continuous process. 3 credit hours.

IE223 Personnel Administration
Prerequisite: IE214 or MG125. Provides a foundation in fundamental concepts and a general knowledge of techniques in the administration of personnel relations. The nature of personnel administration, the handling of personnel problems, employee attitudes and morale. Techniques of personnel administration; recruitment and interviews, placement, training, employee rating. In addition, wage policies and administration related to the IE function are emphasized. In order to secure breadth and depth in the approach to personnel problems, case studies are used at appropriate points throughout the course. 3 credit hours.

IE303 Cost Control
Prerequisite: M118 and junior standing. Basic analysis of cost control techniques. Designed to give members of the management team the underlying rudiments of cost estimating and control systems. Theory of standard costs, flexible budgeting and overhead handling techniques emphasized by analytical problem solution. 3 credit hours.

IE304 Production Control
Prerequisite: IE214, M118 and junior standing. Operations management students may substitute MG125 for the IE214 prerequisite. The basic principles that govern production control in an industrial plant. The principles used in solving problems of procuring and controlling materials, in planning, routing, scheduling and dispatching are considered. Familiarizes the student with existing and new methods used in this field including MRP, computer aided process planning, group technology and O.R. techniques. 3 credit hours.

IE343 Work Design
Prerequisite: IE346. An introductory course in methods and in motion analysis and work measurement. Motion and methods analysis techniques including the principles of motion economy, process analysis charting, operations analysis, activity analysis and work design layout analysis. Students are required to design a work place project which will be filmed on closed-circuit television for analysis. Work measurement includes an introduction to time study fundamentals and predetermined time systems. Laboratory Fee. 4 credit hours.

IE344 Human Factors Engineering
Prerequisite: IE343. A course extending the principles introduced in the prerequisite course including the development of standard data systems, formula construction in standard data, methods-time-measurement and master standard data predetermined time system, work sampling, standards on indirect work, wage payment plans and the use of closed-circuit television as a methods training tool. Also computer assisted data gathering and analysis is covered. Laboratory Fee. 4 credit hours.

IE346 Probability Analysis
Prerequisite: M118. Develops the theory of probability and related applications. Covers combinations and permutations, probability space, law of large numbers, random variables, conditional probability, Bayes' Theorem, Markov chains and stochastic processes. (Not considered acceptable for meeting A.B.E.T. mathematics requirements in the electrical and mechanical engineering programs.) 3 credit hours.

IE347 Statistical Analysis
Prerequisite: IE346. Provides an introduction to the application of statistical techniques to industrial and engineering problems. Measures of central tendency and dispersion, estimation, hypothesis testing, correlation and regression, elementary analysis of variance. 3 credit hours.

IE348 Manufacturing Processes
Corequisite: IE304. Mill and manufacturing processes. The casting of metals, pattern making and mold preparing. Fabricating, metal cutting and welding. Demonstrations, laboratory and inspection trips to local manufacturing plants. 3 credit hours.

IE402 Operations Research
Prerequisite: IE346. The operations research area is oriented to various mathematical methods for solving certain kinds of industrial problems. Topics included are: linear programming, including simple method; transportation and assignment problems; queueing; dynamic programming; simulation. 3 credit hours.

IE408 Systems Analysis
Prerequisite: IE214. Presents the analytical and conceptual techniques upon which systems analysis and development is based, and applications to business and industrial fields. Development of case studies and their application, oriented to the student's major area of interest. 3 credit hours.

COURSES

IE435 Simulation and Applications
Prerequisites: IE347 and either CS102 or CS228. Corequisite: IE402. Techniques for mathematical modeling of a system (business or scientific/engineering) using computer simulation. Simulation principles will be emphasized. Student exercises and projects will be run using modern simulation packages. Computer Use Fee. 3 credit hours.

IE436 Quality Control
Prerequisite: IE347. Economics of quality control; modern methods used by industry to achieve quality of product; preventing defects; organizing for quality; locating chronic sources of trouble; coordinating specifications, manufacturing and inspection; measuring process capability; using inspection data to regulate manufacturing processes; statistical methods, control charts, selection of modern sampling plans. 3 credit hours.

IE437 Metrology and Inspection in Manufacturing
Prerequisites: IE447 and IE436. This is a course to study the metrology and inspection practices in manufacturing. Emphasis will be placed on the design and development of different types of gauging for inspection in manufacturing. 3 credit hours.

IE443 Facilities Planning
Prerequisites: IE304, IE343, senior IE standing. Factors in plant location, design and layout of equipment. The basic principles of obtaining information essential for carrying out such investigations. Survey of necessary functions of materials handling, storage and storeroom maintenance and use of service departments in modern factories. Laboratory Fee. 3 credit hours.

IE448 Advanced Manufacturing Engineering Operations
Prerequisites: MT200 and IE348. A course for understanding the basic principles of the theory of metal cutting and metal working to improve the manufacturing engineering operations. The course will emphasize design and operation of better tooling for different types of manufacturing operations. Experimental investigation of metal cutting and metal working methodologies will be stressed. 3 credit hours.

IE449 Principles of Computer-Aided Manufacturing
Prerequisites: IE448 and EE211. An introductory course on the principles and practices of computer-aided manufacturing that will emphasize the operating principles of numerical control, computer numerical control and direct numerical control machines. Emphasis will be on the design of part programs for NC machining. Both manual and computer assisted part programming will be discussed. 3 credit hours.

IE504 Senior Project
Prerequisite: senior status and permission of the department. The student, in conjunction with a faculty adviser, selects and works on a project. Work is presented at a seminar at the end of the semester. 3 credit hours.

IE599 Independent Study
Prerequisite: consent of the instructor and chairman of the department. Opportunity for the student to explore an area of interest under the direction of a faculty member. Course must be initiated by the student.

International Business

IB312 International Business
Analysis of business environments with special emphasis on similarities and differences among the nations of the world, and views toward developing intercultural managerial effectiveness. 3 credit hours.

IB321 Operation of the Multinational Corporation
Prerequisite: IB312. Specific problems encountered by multinational firms. Topics include investment decisions, planning and control and the social responsibilities of firms in host nations. 3 credit hours.

IB549 International Business Policy
Prerequisite: MK413, junior standing. Identification and relation of the elements involved in the dynamics of a company and its international environment through case analysis. This is a capstone course in international business. 3 credit hours.

IB599 Independent Study
Prerequisite: IB312, junior standing. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

Journalism

J101 Journalism I
A survey of journalism designed to acquaint students with the profession. The American newspaper as a social institution and a medium of communication. 3 credit hours.

J102 Journalism II
Prerequisite: J101. The basic principles of journalism and the organizational patterns of the mass media. Some practice in reporting and the writing of news and feature stories. 3 credit hours.

J201 News Writing and Reporting
Prerequisites: J101, J102. The elements of news, the style and the structure of news stories, news-gathering methods, copy-reading and editing, reporting. 3 credit hours.

J202 Advanced News Writing and Reporting
Prerequisite: J201. Intensive practice in news writing and reporting. 3 credit hours.

J311 The Copy Desk
Intensive practice in copyreading, editing and revising, headline writing, photograph selection, page make-up, and reporting. Regular critiques of the copy-desk work of major newspapers. 3 credit hours.

J351 Journalistic Performance
Students follow the coverage in the media given to selected topics, and prepare to make judgments of the coverage by doing research and becoming knowledgeable about the particular topic chosen. The course stresses analytical reading and responsible, informed criticism. 3 credit hours.

J367 Interpretive and Editorial Writing
Practice in the writing of considered and knowledgeable commentaries on current affairs and in writing of interpretive articles based on investigation, research and interviews. 3 credit hours.

J450-459 Special Topics in Journalism
Special topics in journalism which are of current or special interest.

J599 Independent Study
Prerequisite: consent of the instructor and journalism coordinator. Opportunity for a student, under the direction of a faculty member, to explore an area of interest. 3 credit hours.

Law
(See Business Law)

Management Information Science

MS200 Business Systems Analysis
Prerequisite: junior standing or consent of the instructor. A survey of the use and application of systems analysis to examine problems of both profit and non-profit business enterprises. Origins of systems analysis, basic concepts, band elements of systems and the systems approach. 3 credit hours.

MS300 Microcomputers for Managers - Objectives
Designed to address the role that microcomputers play in management today. A detailed analysis covering the strengths and weaknesses of micros in the past, present and future. Attention will be given to microcomputer selection and user need requirements. To expose students to the microcomputer industry and how it affects the traditional information systems departments. 3 credit hours.

MS400 Management Planning and Control Systems
Prerequisite: junior standing or consent of the instructor. An examination of current concepts, techniques and working practices necessary to develop and implement a system for management planning and control. Development of tools such as PERT, CPM and other network analysis systems; computer assisted decision making. 3 credit hours.

MS401 EDP Security Planning - Objectives
A course designed to help EDP managers design, develop, install and monitor computer security systems. A close look is taken at the fast paced growth in computer related crime area. Guidelines will be developed for computer crime prevention and disaster planning. To teach students how to recognize computer crime and the potential for staggering business losses. Special emphasis will be placed upon teaching how to plan for the unexpected. 3 credit hours.

MS460 Information Systems for Operations and Management
Prerequisite: junior standing or consent of the instructor. A development of the steps necessary to design and implement an integrated information system which can benefit all levels of management. Analysis of information requirements, design approaches, processing methods, data management, organizational and social implications, planning and control systems, analytical and simulation models. 3 credit hours.

Management Science

MG100 Introduction to Business
This course will provide students with a fundamental understanding of modern business organization. The introductory section will focus on an overview of the American business system; its economic foundations, ethical environment, legal and organizational framework. The bulk of the course will deal with the principal organizational functions of production, marketing and finance. Specific sub-topics to be studied include an introduction to accounting, data processing, decision making, personnel administration, promotion, public administration, international business, management science and small business administration. Not open to juniors and seniors in the School of Business. 3 credit hours.

COURSES

MG 125 Management and Organization
A study of management systems as they apply to all organizations. Managerial functions, principles of management, and other aspects of the management process are examined. 3 credit hours.

MG 231 Industrial Relations
Prerequisite: junior standing. A survey of the industrial relations and the personnel management systems of an organization. Manpower planning/forecasting; labor markets; selection and placement; training and development; compensation; government/employer and labor/management relations. 3 credit hours.

MG 317 Small Business Management
Prerequisite: junior standing. A realistic examination of some of the characteristics, opportunities, risk-taking and decision-making in new business enterprises or self-employment ventures. 3 credit hours.

MG 350 Advanced Management
Prerequisite: MG 125. A reinforcement of the principles and practices of management and organization theory from MG 125. Application of management practices to the functional areas, the human factor in organizations, current research and readings. 3 credit hours.

MG 450-454 Special Studies in Business
Prerequisite: junior standing. Special studies in business and public administration. Work may include study and analysis of specific problems within units of business or government and application of theory to those problems, programs of research related to a student's discipline, or special projects. Several sessions may run concurrently. 3 credit hours.

MG 455 Managerial Effectiveness
Prerequisites: MG 324, MG 350. An examination of current practices used in identifying and developing effective managers. The problems of the managerial environment, approaches used to alleviate these problems, development of organizational and managerial effectiveness. 3 credit hours.

MG 512 Contemporary Issues in Business and Society
Prerequisite: senior standing. A rigorous examination of competing concepts of the role of business in society. A capstone, integrative course relating the firm to its environment including issues arising from aggregate social, political, legal and economic factors. 3 credit hours.

MG 515 Management Seminar
Prerequisite: senior standing. An introduction to contemporary publications and the findings of research study reports. Analysis, interpretation and determination of impact of publications on the theory and practice of management. 3 credit hours.

MG 550 Business Policy
Prerequisite: senior standing. An examination of organizational policies from the viewpoint of top-level executives, and a development of analytical frameworks for achieving the goals of the total organization. Discussion of cases and development of oral and written skills. 3 credit hours.

MG 560 Business Systems Simulation
Prerequisite: QA 216. The design, development and application of computer simulation models as tools of analysis for business, economic and electronic computer systems. Deterministic and stochastic decision models, computer simulation using several simulation languages. Computer Use Fee. 3 credit hours.

MG 599 Independent Study
Prerequisite: project, student and faculty director must be approved by the department chairman and the dean of the business school. Independent study on a project of interest to the student under the direction of a faculty member designated by the department chairman. 3 credit hours.

Marketing

MK 105 Principles of Marketing
Prerequisite: EC 133. The fundamental functions of marketing involving the flow of goods and services from producers to consumers. Marketing methods of promotion, pricing, product decisions and distribution channels. 3 credit hours.

MK 205 Consumer Behavior
Prerequisite: MK 105. A study of the principal comprehensive marketing models which focus on buyer decision processes. Topics include brand switching decisions, measures of media effectiveness, market segmentation and other marketing techniques. 3 credit hours.

MK 302 Industrial Marketing
Prerequisite: MK 105. Practices and policies in the distribution of industrial goods including purchasing, market analysis, channels of distribution, pricing, competitive practices and operating costs. 3 credit hours.

MK 307 Advertising and Promotion
Prerequisite: MK 105. The design, management and evaluation of the various communications programs involved in marketing and public relations. 3 credit hours.

MK 316 Sales Management
Prerequisite: MK 105. The management of a sales organization. Recruiting, selecting, training, supervision, motivation and compensation of sales personnel. 3 credit hours.

MK 413 International Marketing Management
Prerequisites: IB312, MK105. Applied marketing decision making in international firms. The development of marketing strategy and techniques in foreign markets. 3 credit hours.

MK 442 Marketing Research and Information Systems
Prerequisites: MK105, QA216, junior standing. Research as a component of the marketing information system. Research design, sampling methods, data interpretation and management of the marketing research function. 3 credit hours.

MK 460 Consumer Protection
Prerequisites: MK105, junior standing. The socio-legal framework within which consumers make purchase decisions. The focal point of the course is to develop an analytical frameword for evaluating the informational needs of consumers and consistent regulatory policies. 3 credit hours.

MK 470 Business Logistics
Prerequisites: MK105, QA118, junior standing. The design and administration of systems to control physical product flows. Both spatial and temporal constraints are treated in the development of transportation, warehousing and manufacturing systems. 3 credit hours.

MK 515 Marketing Management
Prerequisites: MK105, MK442, senior standing. The analysis, planning and control of the marketing effort within the firm. Emphasis is on case analysis. This is a marketing capstone course. 3 credit hours.

MK 599 Independent Study
Prerequisites: MK105, junior standing. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

Mathematics

All prerequisites for the following mathematics courses must be strictly observed unless waived by permission of the mathematics department. Courses marked with a dagger (†) will be offered at the discretion of the department. Courses marked with an asterisk (*) are offered every semester.

***M 103 Fundamental Mathematics**
Required at the inception of the program of study of all students (day and evening) who do not show sufficient competency with fundamental arithmetic and algebra, as determined by placement examination. Review and individualized help as needed in the arithmetic of whole numbers, decimals, fractions, and percents. Introduction to sets. Elementary algebra. Topics from logic, probability, and statistics as time permits. (Students placed in M103 must successfully complete this course before taking any other course having mathematical content.) Students who take M103 will have the total number of credits required for graduation increased by 3 credits. 3 credit hours (4 to 6 hours per week).

***M 105 Introductory College Mathematics**
Introductory college mathematics for the liberal arts student including a variety of mathematical ideas chosen to illustrate the nature and importance of mathematics in human culture. An inductive approach based on experimentation and discovery. 3 credit hours.

***M 109 Elementary College Algebra**
Prerequisite: M103 or placement by the department. A review of the fundamental operations and an extensive study of functions, exponents, radicals, linear and quadratic equations. Additional topics include ratio, proportion, variation, progression and the binomial theorem. 3 credit hours.

***M 115 Pre-Calculus Mathematics**
Prerequisite: a grade of C or higher in M109 or placement by the department. Designed to offer the foundation needed for the study of calculus. Polynomials, algebraic functions, elementary point geometry, plane analytic trigonometry and properties of exponential functions. 4 credit hours.

†M 116 Survey of Calculus
Prerequisite: M115. An intuitive approach to topics in functions, analytic geometry, differential and integral calculus and probability. Designed for insight into, and appreciation of, the methods of analysis. 3 credit hours.

†M 117 Calculus I
Prerequisite: a grade of C or higher in M115 or placement by the department. The first-year college course for majors in mathematics, science and engineering; and the basic prerequisite for all advanced mathematics. Introduces differential and integral calculus of functions of one variable, along with plane analytic geometry. 4 credit hours.

***M 118 Calculus II**
Prerequisite: M117. Continuation of first-year calculus, including methods of integration, the fundamental integration theorem, differentiation and integration of transcendental functions and varied applications. 4 credit hours.

M 121 Algebraic Structures I
A first course in an orientation to abstract mathematics: elementary logic, sets, mappings, relations, operations, elementary group theory. Open to all freshman and sophomores. 3 credit hours.

†M 122 Algebraic Structures II
Prerequisite: M121 or permission of the department. A continuation of M121 including a variety of topics. 3 credit hours.

COURSES

***M127 Finite Mathematics**
Prerequisite: M103 or placement by the department. Basic discrete functions with numerous applications in the social sciences. Topics include elementary set theory and counting techniques, functions and graphs, an introduction to computing and computers, an introduction to probability. 3 credit hours.

M137 Calculus Topics
Prerequisite: consent of the department. The theoretical material of the standard first year of calculus, including limits, chain rules, mean value theorems and a discussion of the fundamental theorem of integral calculus. Upon successful completion, the student is qualified for M203. 4 credit hours.

***M203 Calculus III**
Prerequisite: M118. The calculus of multiple variables, covering third-dimensional topics in analytics, linear algebra, and vector analysis, plus partial differentiation, multiple integration, infinite series and indeterminate forms. 4 credit hours.

***M204 Differential Equations**
Prerequisite: M203. The solution of ordinary differential equations, including the use of Laplace transforms. Existence of solutions, series solutions, matrix methods, nonlinear equations and varied applications. 3 credit hours.

M228 Elementary Statistics
Prerequisite: M 127. A non-calculus based course which includes basic probability theory, random variables and their distributions, estimation and hypothesis testing, regression and correlation. Emphasis on an applied approach to statistical theory with applications chosen from many different fields of study. Students will be introduced to and make use of the computer packages SPSS for data analysis. (Not open to students who have taken calculus.) Computer use fees. 4 credit hours.

M270 Discrete Structures
Prerequisites: M118 and CS102 or CS106. Corequisite: M203. This course introduces the student to the discrete structures underlying the mathematical foundations of computer science. Topics include sets and relations, recursive and inductive procedures, functions, groups and semigroups, Boolean algebras, elementary combinatorics, and algorithm analysis. Applications of the above topics to computer science will be studied. 3 credit hours. Offered each spring semester.

†M301 Linear Analysis
Prerequisites: M204, M231. Linear vector spaces, infinite series, transformations, generalized Fourier series, solutions of partial differential equations. 3 credit hours.

M303 Advanced Calculus
Prerequisite: M204. A survey course in applied mathematics. Vector calculus: line and surface integrals, integral theorems of Green and Stokes, and the divergence theorem. Complex variables: elementary functions, Cauchy-Riemann equations, integration, Cauchy integral theorem, infinite series, calculus of residues and conformal mapping. 3 credit hours. Offered each fall semester.

M309 Advanced Differential Equations
Prerequisite: M204. Theoretical analysis and applications of nonlinear differential equations. Phase plane and space, perturbation theory and techniques, series and related methods, stability theory and techniques and relaxation phenomena. 3 credit hours.

***M311 Linear Algebra**
Prerequisite: M203. Matrices, systems of linear equations and their solutions, linear vector spaces, linear transformations, eigenvalues and eigenvectors. Applications. 3 credit hours.

M321 Modern Algebra I
Prerequisites: M121, M231. Groups, rings, integral domains, fields, polynomials. 3 credit hours.

†M325 Number Theory
Prerequisite: M121. Topics are selected from the following: mathematical induction, Euclidean algorithm, integers, number theoretic functions, Euler-Fermat theorems, congruence, quadratic residues and Peano axioms. 3 credit hours.

M331 Applied Combinatorics
Prerequisite: M270 or permission of department. Problem solving using graph theory and combinatorical methods. Topics include counting methods, recurrence, generating functions, enumeration, graphs, trees, coloring problems, network flows and matchings. Special emphasis on reasoning which underlies combinatorical problems solving, algorithm development and logical structure of programs. 3 credit hours.

M338-339 Numerical Analysis I and II
Prerequisites: M204, CS102 or CS106. Approximation and error evaluation. Finite difference approximation by polynomial and orthogonal series, solutions of ordinary differential equations; solutions of elliptic, parabolic, and hyperbolic partial differential equations; interpolation and basic integral equation solutions. Computer Use Fee. 6 credit hours.

†M341 Sets and Ordered Structures
Prerequisite: M121. Axiomatic set theory based on the Zermelo-Fraenkel theory, algebra of sets, relations and functions, finite and infinite sets, order, axiom of choice and its equivalents. 3 credit hours.

†M343 Projective Geometry
Prerequisites: M121, M231. Projective transformations, fixed points, invariants, cross-ratio, conics, Euclidean and non-Euclidean geometeries. 3 credit hours.

†M345 Tensor Analysis
Prerequisites: M204, M231. The properties of vectors and tensors in Cartesin and in general curvilinear coordinate systems. Topics covered include: invariance properties, transformation laws, calculus of tensors, covariant differentiation, surface theory. Applications are considered in areas such as rigid body dynamics, elasticity, fluid mechanics, electricity and magnetism and geometry. 3 credit hours.

M361 Mathematical Modeling
Prerequisites: M231 and at least junior standing. Problem solving through mathematical model building. Emphasis on applications of mathematics to the social, life and managerial sciences. Topics are selected from probability, graph theory, Markov processes, linear programming, optimization, game theory, simulation. Computer Use Fee. 3 credit hours.

M371 Probability and Statistics I
Prerequisite: M203. Axiomatic study of probability: sample spaces, combinatorial analysis, independence and dependence, random variables, distribution functions, moment generating functions, central limit theorem. 3 credit hours. Offered each fall semester.

†M381 Real Analysis I
Prerequisites: M121, M203. Foundations of analysis, sets and functions, real and complex number systems; limits, covergence and continuity, sequences and infinite series, differentiation. 3 credit hours.

M403 Techniques in Applied Mathematics
Prerequisite: M204.Techniques in applied analysis including Fourier series; orthogonal functions such as Bessel functions, Legendre polynomials, Chebychev polynomials, Laplace and Fourier transforms; product solutions of partial differential equations and boundary value problems. 3 credit hours.

†M412 Real Analysis II
Prerequisite: M381. Continuation of M381 including Riemann-Stieltjes integration theory and an introduction to measure theory and the Lebesque integral. 3 credit hours.

†M422 Modern Algebra II
Prerequisite: M321. Continuation of M321 including topics such as: vector spaces, modules, commutative ring theory, Galois theory. 3 credit hours.

†M423 Complex Variables
Prerequisite: M204. For mathematics, science and engineering students. Review of elementary functions and Euler forms; holomorphic functions, Laurent series, singularities, calculus of residues, contour integration, maximum modulus theorem, bilinear and inverse transformation, conformal mapping, and analytic continuation. 3 credit hours.

†M441 Topology
Prerequisite: M381. Topics selected from the following: Hausdorff neighborhood relations; derived, open and closed sets; closure; topological space; bases; homeomorphisms; relative topology; product spaces; separation axioms; metric spaces; connectedness and compactness. 3 credit hours.

M472 Probability and Statistics II
Prerequisite: M371. Elements of the theory of point estimation, maximum likelihood estimates, theory of testing hypotheses, power of a test, confidence intervals, linear regression, experimental design and anaysis of variance, correlation, and nonparametric tests. 3 credit hours.

M491-499 Department Seminar
A study of a mathematical topic or topics not covered in the above courses. Subject of study will be announced by the mathematics department in advance. A paper and/or seminar talk, suitable for presentation to all interested mathematics faculty, will be required. 3 credit hours.

M599 Independent Study
Prerequisite: consent of faculty member and chairman of department. Oportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 12.

Materials Technology

MT200 Engineering Materials
Prerequisite: CH103. A study of the properties of the principal engineering materials of modern technology: steels and nonferrous alloys and their heat treatment, concrete, wood, ceramics and plastics. Gives engineers sufficient background to aid them in selecting materials and setting specifications. 3 credit hours.

MT219 Physical Metallurgy
Prerequisite: CH105. Introduction to the relationships between atomic structure and macroscopic properties such as mechanical strength and ductility. Atomic bonding, crystallography, phase equilibrium and phase transformations are among the topics considered. 3 credit hours.

MT220 Electronic Materials
Prerequisite: PH205. Study of transport and rearrangement of charge to determine electric and magnetic properties of solids. Semiconductors, superconductors and magnetic materials are among the topics considered. 3 credit hours.

MT301 Welding Metallurgy
Prerequisite: MT219. Study of welding and brazing procedures of ferrous and nonferrous alloys, with consideration of macro and microstructures of welded members. 3 credit hours.

COURSES

MT302 Polymeric Materials
Prerequisite: CH105. Chemistry and physical properties of rubber and plastic materials. Consideration of both fundamental principles and engineering applications. 3 credit hours.

MT304 Mechanical Behavior of Materials
Prerequisite: MT219. Detailed study of elastic and plastic deformation of materials at room temperature and elevated temperatures. Dislocation theory and microplasticity models considered. 3 credit hours.

MT310 Materials Laboratory
Prerequisite: MT219. Laboratory documentation of the effects of heat treatment in annealing and hardening both ferrous and nonferrous materials. Microscopic observation and photography. Other experiments in materials engineering. Laboratory Fee. 3 credit hours.

MT324 Nuclear Reactor Materials
Prerequisite: MT219. Consideration of nuclear reactors, the production and fabrication of metals and alloys used as reactor components, non-destructive testing and radiation damage of materials. 3 credit hours.

MT331 Nonferrous Metallurgy
Prerequisite: MT219. The physical metallurgy of aluminum, copper, magnesium and other nonferrous metals. Alloying, fabrication and consideration of materials properties which make nonferrous metals competitive with steels. 3 credit hours.

MT342 Steels and Their Heat Treatment
Prerequisite: MT219. Fundamentals of ferrous physical metallurgy such as iron-carbon phase diagram, transformation diagrams, hardenability and the effects of alloying elements. Heat treating discussed in terms of resulting microstructures and physical properties. 3 credit hours.

MT400 Materials Reactions
Prerequisite: MT219. Consideration of chemical reactions in the liquid and solid state of importance to the field of materials engineering. Topics include extractive metallurgy, internal oxidation, surface treatment and recycling of secondary materials. 3 credit hours.

MT450 Special Topics in Materials
Prerequisite: Instructor's consent. In-depth study of topics chosen from areas of particular and current interest to materials and engineering students. 3 credit hours.

MT500 Research Project
Prerequisites: MT331, MT342, senior status. An independent design, theoretical analysis or laboratory investigation, chosen by the student and approved by the chairman of the department. The work is performed by the student with frequent critiques by a faculty member. 3 credit hours.

Mechanical Engineering

ME101 Engineering Graphics
Fundamentals of orthographic projections, pictorial views, auxiliary views, surface intersections, dimensioning and tolerancing. Introduction to computer-aided drafting in two and three dimensions. Construction, scaling, and rotation of computer-generated wire-frame models. 3 credit hours.

ME204 Dynamics
Prerequisite: CE201 or instructor's consent. M118 (M118 may be taken concurrently). Kinematics and dynamics of particles and rigid bodies with emphasis on two dimensional problems. Vector representation of motion in rectangular, polar and natural coordinates. Impulse-momentum and work-energy theorems. Rigid bodies in translation, rotation and general plane motion. 3 credit hours.

ME215 Instrumentation Laboratory
Laboratory experiments introducing equipment and techniques used to measure force, static displacement, dynamic motion, stress, strain, fluid flow, pressure, and temperature. Introduction to data acquisition, data analysis and control using microcomputers. Laboratory Fee. 2 credit hours.

ME301 Thermodynamics I
Prerequisite: M118. Classical thermodynamics treatment of first and second laws. Thermal and caloric equations of state. Closed and open systems, and steady flow processes. Absolute temperature, entropy, combined first and second laws. Power and refrigeration cycles. 3 credit hours.

ME302 Thermodynamics II
Prerequisites: ME301, M203 (M203 may be taken concurrently). Extensions and applications of first and second laws; availability, combustion process, phase and chemical equilibrium, ideal gas mixtures. Maxwell's relations. Introduction to statistical thermodynamics. Advanced thermodynamic cycles. 3 credit hours.

ME307 Strength of Materials II
Prerequisite: CE202. Elastic and plastic behavior of structural elements such as beams, columns and shafts under direct and combined loading. Ultimate strength design, theory of failure, composite member design and an introduction to indeterminate structures. 3 credit hours.

ME311 Machine Elements
Prerequisite: CE202. Analysis and design of machine elements to meet specified operating conditions. Stresses, deformations and other factors in design of machine parts. Static theories of failure. Fatigue strength, endurance limit and fatigue design methods via Soderberg and Goodman diagrams. Finite life design. Application to machine elements such as screws, bolts, ball and roller bearings, clutches and brakes. 3 credit hours.

ME312 Mechanical Design
Prerequisite: ME311 or instructor's consent. Continuation of ME 311. Topics include shaft design, springs, hydrodynamic lubrication, gears. Design project. 3 credit hours.

ME315 Mechanics Laboratory
Prerequisites: CE202, ME204, ME215. Laboratory experiments in mechanics of materials, vibration analysis, computer-aided data acquisition and analysis. Emphasis placed on measurement techniques, report writing, and error analysis. Laboratory Fee. 2 credit hours.

ME343 Mechanisms
Prerequisite: ME204. Graphic and analytical methods for determining displacements, velocities and accelerations of machine components. Application to simple mechanisms such as linkages, cams, gears. 3 credit hours.

ME344 Mechanics of Vibration
Prerequisites: ME204, M204. The mathematical relationships necessary for the solution of problems involving the vibration of lumped and continuous systems; damping; free and forced motions; resonance; isolation; energy methods; balancing; single, two and multiple degrees of freedom; vibration measurement. 3 credit hours.

ME401 Mechanical Systems Analysis
Prerequisites: ME204, M204. Dynamic systems and their characteristics. Analogy of electrical, mechanical and other systems. Mixed systems; dimensional analysis; design considerations. 3 credit hours.

ME403 Introduction to Flight Propulsion
Prerequisites: ME422, instructor's consent. A senior course designed for those students who intend to work or pursue further studies in the aerospace field. Among the topics covered are: detonation and deflagration, introductory one-dimensional nonsteady gas flows, basic concepts of turbomachinery and survey of the contemporary propulsive devices. Shock tubes, supersonic wind tunnels and flame propagation demonstrations accompany the lectures. 3 credit hours.

ME404 Heat and Mass Transfer
Prerequisites: ME302, ME421 (ME421 may be taken concurrently), M204. Conduction in solids, solution of multi-dimensional conduction problems, unsteady conduction, radiation, boundary layer and convection. Introduction to mass transfer. The lectures include occasional demonstrations of convection, radiation, heat exchangers. 3 credit hours.

ME405 Advanced Mechanical Design
Prerequisites: ME312, ME421. Selected advanced topics related to the design of machine elements such as hydrodynamic theory of lubrication and principles of hydraulic machines with application to hydraulic couplings. 3 credit hours.

ME406 Turbomachinery
Prerequisites: ME302, ME421. Review of basic thermodynamics and fluid mechanics. Dimensional analysis. Specific speed. Classification of turbomachines. Cavitation. Losses. Definitions of efficiency. Theories of turbomachines. Design considerations for stator blades and rotor blades. Computer-aided design. 3 credit hours.

ME407 Solar Energy Thermal Processes
Prerequisite: ME404 (may be taken concurrently). Introduction to the fundamentals of solar energy thermal processes including solar radiation, flat plate and focusing collectors, energy storage, hot water heating, cooling and auxiliary system components. Emphasis on the design and evaluation of systems as they pertain to commercial and residential buildings. 3 credit hours.

ME408 Advanced Mechanics
Prerequisites: ME204, M204. Plane and spatial motion of particles and rigid bodies, inertia tensor, relative motion, gyroscopes, central force motion. Lagrangian and Hamiltonian methods. 3 credit hours.

ME410-411 Introduction to Nuclear Engineering I and II
Prerequisite: M204. The fundamental scientific and engineering principles of nuclear reactor systems. Reactor design and behavior related to fission process, its associated radiations and engineering principles. 6 credit hours.

ME415 Thermo/Fluids Laboratory
Prerequisites: ME215, ME302, ME421, ME404 (ME404 may be taken concurrently). A survey of experiments and laboratory investigations covering the areas of fluid mechanics, thermodynamics, heat transfer and gas dynamics. Laboratory Fee. 2 credit hours.

ME421 Fluid Mechanics
Prerequisites: ME204, M204. Fluid kinematics; continuity equation, vector operations. Momentum equation for frictionless flow; Bernoulli equation with applications. Irrotational flow; velocity potential, Laplace's equation, dynamic pressure and lift. Stream function for incompressible flows. Rotational flows; vorticity; circulation, lift and drag. Integral momentum analysis. Navier-Stokes equation; stress tensor. Newtonian fluid. Boundary layer approximations. 3 credit hours.

COURSES

ME422 Introduction to Gas Dynamics
Prerequisites: ME302, ME421 (ME421 may be taken concurrently). Compressible fluid flow with emphasis on one-dimensional ducted steady flows with heat transfer, frictional effects, shock waves and combined effects. Introductory considerations of two- and three-dimensional flows. Occasional demonstrations accompany the lectures. 3 credit hours.

ME425 Senior Design Project
Prerequisites: ME312 and senior status. Group design projects under faculty supervision. Design of devices, machines or processes constituting solutions to open-ended problems. Projects carried through from conception to design drawings or to prototype construction, testing and evaluation. Topics selected from areas of mechanical and thermo/fluid systems. Report and presentation at the end of semester. 3 credit hours.

ME450 Special Topics in Mechanical Engineering.
Prerequisite: Instructor's consent. In-depth study of topics chosen from areas of particular and current interest to mechanical engineering students. 3 credit hours.

ME512 Senior Seminar
Open to seniors with chairman's approval. Individual oral presentations by students of material researched on topics selected by students and faculty at the beginning of the term. 3 credit hours.

ME599 Independent Study
Prerequisites: consent of faculty supervisor and approval of department chairman. Independent study provides an opportunity for the student to explore an area of special interest under faculty supervision. 1-3 credit hours per semester with a maximum of 12.

Music

MU106 Chorus
Styles of group singing, survey of choral music literature from around the world. 3 credit hours.

MU111 Introduction to Music
Basic forms and styles of music in the Western World. Music appreciation. 3 credit hours.

MU112 Introduction to World Music
Non-Western musical styles, their cultures and aesthetics; music of the indigenous cultures of the Americas and the advanced musics of the Near East and Far East; emphasis on India, the Orient, Southeast Asia, Africa and Indonesia. 3 credit hours.

MU116 Performance
Open to all students interested in ensembles or private instruction. Students with adequate scholastic standing may carry this course for credit in addition to a normal program. 1-8 credit hours; maximum 3 credit hours per semester.

MU 150-151 Introduction to Music Theory
Fundamentals of music: notation, physical and acoustical foundations; harmony and melody; modality, tonality, atonality; consonance and dissonance; tension; introductory composition; and ear training. 6 credit hours.

MU175-176 Musicianship I and II
Prerequisites: MU111 or 112; MU 150. Development of practical skills essential to performers and ensemble directors: ear training, sight singing, dictation, transcription, arranging, notation, score writing. 6 credit hours.

MU198-199 Introduction to American Music
Music of the North American continent from the Puritans to the present day; both European and non-European musical traditions, with emphasis on twentieth century developments. 6 credit hours.

MU201-202 Analysis and History of European Art Music
The growth of Western art music from its beginnings to the present day. Analysis of musical masterpieces on a technical and conceptual basis. 6 credit hours.

MU211 History of Rock
Study of rock music as a musical tradition and social, political and economic phenomenon. Ethnomusicological and historical examination of rock from its pre-1955 roots to the present. 3 credit hours.

MU221 Film Music
A course designed for both music and communication majors. Introduces students to the art, science and history of musical scores in film. Class work includes viewing and analysis of films with significant cueing and an introduction to the musical repertoire available to the film maker. 3 credit hours.

MU250-251 Theory and Composition
Investigation of music theory in various parts of the world, including the Western Art Tradition. Exercises in the composition of music within these theoretical constructs. Ear training and keyboard harmony. 6 credit hours.

MU299 Problems of Music
Music as an art form throughout the world. Music aesthetics and its relationship to the performance and composition of music. 3 credit hours.

MU300 Studies in Music I
Area studies in music and its parent culture. Cultural theory as related to the music; instruments of the area and their etymologies; performance practices; the social role of music, both art and folk. Areas offered depend on availability of staff: China, Japan, the Near East, the Indian subcontinent, Africa, American Indian, Afro-American, Latin America, the Anglo-Celtic tradition and others. 3 credit hours.

MU301 Recording Fundamentals
A study of the fundamentals of sound recording technique and methodology: acoustics microphones, microphone placement, tape formats and formulations, tape recorders, mono and stereo recording, live recording, mixers, signal processing. This course also emphasizes the importance of sound aesthetics and ethics in the sound recording process. 3 credit hours.

MU311-312 Multitrack Recording I and II
Prerequisite: MU301. Two semester course in the technique and methodology of multitrack studio and live recording. Includes detailed study of multiple tracking, mixing consoles, overdubbing, ping-ponging, tape recorders, signal processing, and mastering. 6 credit hours.

MU350 Studies in Music II
Area studies in musical forms; their history, evolution, and resultant metamorphoses, performance practices, and extant forms. Areas offered depend upon availability of staff. 3 credit hours.

MU401-402 Recording Seminar/ Project I and II
Prerequisite: MU312. Each student will complete a professional quality recording production or research and development project. Work may consist of internship or co-op experience in a professional recording studio. Seminar will also include presentations on areas of professional interest such as career opportunities and new development in studio technique and technology. 6 credit hours.

MU416 Advanced Performance
Prerequisite: consent of the department staff and a faculty adviser. Preparation and presentation of an instrumental or vocal performance indicating sufficient proficiency to warrant the awarding of a degree in world music. 3 credit hours.

MU500 Seminar in Advanced Research
Prerequisite: permission of the instructor. Bibliographical studies of major world music areas; investigation of current and historical musicological theories, analysis and criticism of musicological area literatures. 3 credit hours.

MU550 Studies in Urban Ethnic Music
Prerequisite: consent of the instructor. The music tradition of inner-city ethnic groups; emphasis on the operation of the oral tradition in the preservation of cultural values and customs as evidenced through music. Classroom discussion will be balanced by field research in the urban vicinity. 3 credit hours.

MU599 Independent Study
Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 12.

Occupational Safety and Health

SH100 Safety Organization and Management
History and development of the safety movement, nature and extent of the problem, development of worker's compensation, development of safety programs, cost analysis techniques, locating and defining accident sources, analysis of the human element, employee training, medical services and facilities and the what and how of the Occupational Safety and Health Act. 3 credit hours.

SH110 Accident Conditions and Controls
Prerequisite: SH100. Mechanical hazards, machine and equipment guarding, boilers and pressure vessels, structural hazards, materials handling hazards and equipment use, electrical hazards, personal protective equipment. 3 credit hours.

SH200 Elements of Industrial Hygiene
Prerequisites: PH103, SH110, CH103, or CH115. Analysis of toxic substances and their effect on the human body. Analysis and effect of chemical hazards, physical hazards of electromagnetic and ionizing radiation, abnormal temperature and pressure, noise, ultrasonic and low-frequency vibration; sampling techniques including detector tubes, particulate sampling, noise measurement and radiation detection; governmental and industrial hygiene standards and codes. 3 credit hours.

SH210 Sound-Hearing-Noise
Prerequisite: SH200. An analysis of three major factors associated with the noise issue viz, the physics of sound, the biological phenomenon of hearing, and the engineering processes of noise abatement including a review of the OSHA legal standards for noise exposure. 3 credit hours.

SH400 Occupational Safety and Health Legal Standards
Prerequisite: SH100. All aspects of the legal constraints applicable to the occupational safety field are examined. Included are OSHA, federal laws not under OSHA jurisdiction, selected state legislation, current and pending product liability laws, environmental protection law and fire safety codes. Consideration will be made for emphasizing particular legal areas as requested. 3 credit hours.

COURSES

SH598 Co-op Training—In-Process Registration
Prerequisite: Satisfactory completion of sophomore year with a minimum QPR of 2.7. Through the cooperation of area employers, students alternate between school and work periods in the field of occupational safety & health. During the working period, the student must conform to the employer's work rules. Pay rates and other benefits are subject to individual negotation and not regulated by the university. No direct credits are given, but Independent Study (SH599) may be developed in connection with job assignment. Registration charge $100.

SH599 Independent Study
Prerequisites: consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 12.

Philosophy

PL201 Philosophical Methods
Logic applied to analyzing and solving practical problems related to the individual and environment, the natural and social sciences, the humanities and the other areas of philosophy. 3 credit hours.

PL205 Classical Philosophy
The origins of philosophy in the West, and the continuing influence of classical thought on the development of ideas. 3 credit hours.

PL206 Modern Philosophy: Descartes to the Present
Philosophical theories that have dominated the modern age. Stress on a central figure of the period. 3 credit hours.

PL210 Logic
Modern symbolic logic and its applications. 3 credit hours.

PL213-214 Contemporary Issues in Philosophy
Current philosophical thinking on some particular issue in an area such as natural science, social science, metaphysics, religion, aesthetics, ethics, theory of knowledge or language. Courses can be taken concurrently. 3 credit hours each.

PL222 Ethics in a Changing Society
The major ethical systems in the framework of contemporary society. Ethical norms and their relation to human activities. 3 credit hours.

PL223 Ethics and Business
How ethics and other values function in their relation to business enterprise. 3 credit hours.

PL240 Philosophy of Science and Technology
Scientific method, the logic of scientific explanation, the application of science to practical problems, and questions peculiar to the social sciences. 3 credit hours.

PL250 Philosophy of Religion
An examination of some philosophical notions used in religious discourse, such as meaning, truth, faith, being, God, the holy. 3 credit hours.

PL254 Philosophy and Human Relationships
Philosophical questions about human relationships and the nature of the person. Applications to such contemporary issues as: feminism and sexism; love and sexual relationships; marriage and the family; relationships between professionals and clients; barriers of background, race or belief. 3 credit hours.

PL256 Analysis and Criticism of the Arts
The language used to talk about works of art: form, content, expression, value and the ontological status of the art object. Spring semester. 3 credit hours.

PL260-261 Religious Intellectual Traditions
Philosophical issues within particular religious commitments. 3 credit hours.

PL599 Independent Study
Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours with a maximum of 12.

Physics

PH100 Introductory Physics
Primarily for liberal arts and business students interested in a broad, non-mathematical understanding of physics. Emphasis on the basic concepts of physics, their application to our everyday environment and their impact on society. 3 credit hours.

PH101 Energy—Present and Future
Intended primarily for business and liberal arts students. Explores the nature, role and economic impact of energy in our society. Topics include: the nature and growth of energy consumption, physical limits to energy production and consumption, environmental effects and comparisons of energy alternatives. Special emphasis on the technical, environmental and economic aspects of nuclear power as well as energy sources of the future such as fast breeder reactors, fusion, solar and geothermal power. 3 credit hours.

PH103-104 General Physics I and II
Primarily for life science majors with no calculus background. Basic concepts of classical physics: fundamental laws of mechanics, heat, electromagnetism, optics, and conservation principles. Introduction to modern physics: relativity and quantum theory, atomic, nuclear and solid-state physics. Application of physical principles to life sciences. 6 credit hours.

PH105-106 General Physics Laboratory I and II
Should be taken concurrently with PH103-104. Laboratory Fee. 2 credit hours.

PH130 Radiation Safety
Intended for students in occupational safety and hygiene, fire science, forensic science and related fields, as well as science and engineering students with interests in this area. Topics include: the nature of radiation and radioactivity, the interaction of radiation with matter, biological effects of radiation, detection and measurement of radiation, shielding considerations, dosimetry, and standards for personal protection. 3 credit hours.

PH140 Radioactivity Laboratory Technique
Prerequisite: one semester of laboratory science. Provides a practical working knowledge of radioactivity techniques to students in any branch of science engineering or forensics, or to anyone wishing knowledge of the role of nuclear technology today. Experiments may be completed in biology, chemistry, engineering, forensics or physics, according to the interest of the student. Laboratory Fee. 2 credit hours.

PH150 Mechanics, Heat and Waves with Laboratory
Prerequisite: M117 or instructor's consent (M117 may be taken concurrently). Introductory course for physical science and engineering majors. Kinematics, Newton's laws, conservation principles for momentum, energy and angular momentum. Thermal physics. Basic properties of waves, simple harmonic motion, super-position principle, interference phenomena and sound. Laboratory Fee. 4 credit hours.

PH205 Electromagnetism and Optics with Laboratory
Prerequisites: PH150, M118 (M118 may be taken concurrently). Basic concepts of electricity and magnetism; Coulomb's law, electric field and potential, Gauss's law, Ohm's law, Kirchoff's rules, capacitance, magnetic field, Ampere's law, Faraday's law of induction, Maxwell's equations, electromagnetic waves. Fundamentals of optics; light, laws of reflection and refraction, interference and diffraction phenomena, polarization, gratings, lenses and optical instruments. Laboratory Fee. 4 credit hours.

PH211 Modern Physics
Prerequisite: PH205. Modern physics fundamentals. Twentieth-century developments in the theory of relativity and the quantum theory. Atomic, nuclear, solid-state and elementary particle physics. 3 credit hours.

PH270 Thermal Physics
Prerequisite: PH103 or PH150. Basic thermodynamics and its applications. Major emphasis on the efficiency of energy conversion and utilization. Topics include: the laws of thermodynamics, entropy, efficiency of heat engines, solar energy, the energy balance of the earth, energy systems of the future, economics of energy use. 3 credit hours.

PH280 Lasers
Prerequisite: PH205. Laser theory, holography, construction and application to latest engineering and scientific uses. 3 credit hours.

PH285 Modern Optics
Prerequisite: PH205. Introduction to optical theories. Topics on the latest developments in optics. Application to life sciences and engineering. 3 credit hours.

PH301 Analytical Mechanics
Prerequisites: M150, M204, or instructor's consent. Intermediate analytical mechanics. Statics and dynamics of particles and rigid bodies. Emphasis on the theory of motion under central forces and on the use of the generalized coordinates; introduction to an elementary Lagranian and Hamiltonian formalism; small vibrations. 3 credit hours.

PH351 Intermediate Electricity and Magnetism
Prerequisites: PH205, M204. Electric field and potential using vector field formalism. Boundary conditions. Poisson's and Laplace's equations. Electromagnetic fields in cavities and weaveguides. Electromagnetic waves. 3 credit hours.

PH373 Advanced Laboratory
Prerequisite: PH211. Selected experiments in atomic, nuclear, and solid state physics. Laboratory Fee. 2 credit hours.

PH400 Statistical Mechanics
Prerequisite: instructor's consent. An introductory course in classical and quantum statistical mechanics. The canonical ensemble: Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics and their applications; statistical interpretation of thermodynamics; transport processes. 3 credit hours.

COURSES

PH401 Atomic Physics
Prerequisite: PH211. Structure and interactions of atomic systems including Schrodinger's equation, atomic bonding, scattering and mean free path, radiative transitions and laser theory. 3 credit hours.

PH404 Senior Project
Open to senior physics majors. Individual projects in experimental or theoretical physics to be carried out under direct supervision of a faculty advisor. 1-6 credit hours.

PH406 Solid-State Physics
Prerequisite: PH211. Introduction to the physics of solids with emphasis on crystal structure, lattice vibrations, band theory, semiconductor, magnetism and superconductivity. Applications to semiconductor devices and metallurgy. 3 credit hours.

PH415 Nuclear Physics
Prerequisite: PH211 or instructor's consent. Elementary nuclear physics. Nuclear structure, natural radioactivity, induced radioactivity nuclear forces and reactions, fission and fusion, reactors and topics of special interest. 3 credit hours.

PH451 Elementary Quantum Mechanics
Prerequisite: PH211 or instructor's consent. An elementary treatment of nonrelativistic quantum mechanics. Schrodinger's equation with its applications to atomic and nuclear structure; collision theory; radiation; introductory perturbation theory. 3 credit hours.

PH470 Theory of Relativity
Prerequisite: PH211 or instructor's consent. Introduction to Einstein's theory of relativity. Special theory of relativity; Lorentz transformations, relativistic mechanics and electromagnetism. General theory of relativity; equivalence principle, Einstein's three tests, graviton, black hole and cosmology. 3 credit hours.

PH599 Independent Study
Prerequisites: consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 12.

Political Science

†Institute of Law and Public Affairs courses

PS101 Introduction to Politics
A basic course for political science majors and for those interested in understanding politics; political components found in man; power, myths, community, obligation, equality, authority, change and justice. 3 credit hours.

PS121 American Government and Politics
A basic study of the American political system. Constitutional foundations, the political culture, Congress, the Presidency, the judicial system, political parties, interest groups, individual liberties, federalism, the policy-making process. 3 credit hours.

PS122 State and Local Government and Politics
Problems of cities, revenue sharing, community power structures, welfare, public safety, the state political party, big-city political machines, interest groups, state legislatures, the governor, the mayor, courts and judicial reform. 3 credit hours.

PS201-202 Women and the Political Process
The impact of women on the economic, social and political process; problems of integration and equalitarianism. 3 credit hours.

PS203 American Political Thought
Pre-revolutionary and revolutionary political thought; classical conservatism, liberalism, Jacksonian democracy, civil disobedience, social Darwinism, progressive individualism and pluralism. 3 credit hours.

PS205 The Politics of the Black Movement in America
The political development of the Black movement in America emphasizing ideological, legal and cultural perspectives. 3 credit hours.

PS216 Urban Government and Politics
A study of the urban political process. Structures and organizations of urban governments, decision making, public policy, the "urban crisis," crime and law enforcement, party politics and elections, taxation and spending patterns, environmental problems, management of urban development. 3 credit hours.

PS222 United States Foreign Policy
Quantitative and qualitative examination of the foreign policy process; strategy and tactics of a super power in the twentieth century and the determinants of foreign and military policy. 3 credit hours.

†PS224 Public Attitudes and Public Policy
A study of the sources of mass political attitudes and behavior and their effect upon public policy. The course will examine the techniques for influencing opinion including propaganda and mass media communications. 3 credit hours.

†PS 226 Family Law
A study of legal relations between husband and wife including marriage, annulment, divorce, alimony, separation, adoption, custody arrangements and basic procedures of family law litigation. 3 credit hours.

†PS 228 Legal and Public Interest Groups
This course will examine, through readings and field trips, various institutions in the legal culture. Emphasis on the purpose and function of each organization and on vocational opportunities. Among the institutions to be studied are the private and public interest law firm, administrative agencies. 3 credit hours.

†PS 229 Legal Communications
This course seeks to familiarize students with the kinds of legal documents and written instruments employed by participants in the legal process. Students will learn to recognize and understand the purpose of writs, complaints, briefs, memoranda, contracts, wills and motions. 3 credit hours.

†PS 230 Anglo-American Jurisprudence
This course will survey ideas about the nature of law. Among the legal philosophers examined will be Plato, Aristotle, St. Thomas Aquinas, John Austin, William Blackstone, Benjamin Cardozo, L.A. Hart and Oliver Wendell Holmes. The contribution to legal theory made by various schools of jurisprudence (e.g., positivism, legal realism) will also be examined. 3 credit hours.

†PS 231 Judicial Behavior
Examination of the American court system as a political policy-making body. Topics considered include: the structure of the judicial system, the influence of sociological and psychological factors on judicial behavior and the nature and impact of the judicial decision-making process. 3 credit hours.

PS 232 The Politics of the First Amendment
Prerequisite: PS 121. Examination of the political implications of the First Amendment freedoms of speech, press and religions; Supreme Court adaptation of the First Amendment to changing political social conditions. 3 credit hours.

†PS 238 Legal Procedure I
This course is designed to provide a practical knowedge of civil procedure for the pre-law and paralegal student. 3 credit hours.

†PS 239 Legal Procedure II
An introduction to litigation techniques and procedures, including skills needed to interview clients, negotiate settlements, take depositions and prepare for trial.

†PS 240 Legal Bibliography and Resources
An introduction to legal bibliographic materials. Students will learn how to use various kinds of law books in solving research problems incident to advising clients and trying and appealing cases. The function of court reports, statutes, codes, digests, citators, loose-leaf services and treatises will be discussed. 3 credit hours.

PS 241 International Relations
Forces and structures operating in the modern nation state system; the foreign policy process; decision-making process; the impact of decolonization on traditional interstate behavior; economic and political developments since World War II. 3 credit hours.

PS 243 International Law and Organization
Prerequisite: PS 241. Traditional and modern approach to international law and organization; major emphasis on the contribution of law and organization to the establishment of a world of law and world peace. The League of Nations system and the United Nations system are analyzed. 3 credit hours.

†PS 244 Estates and Trusts
An examination of the legal principles and techniques of effective estate planning and administration. Topics covered include inheritance statutes, preparation and execution of wills, and record keeping practices. 3 credit hours.

PS 261 Modern Political Analysis
Introduction to the new approach of political analysis; personality and politics; political socialization; role and group theory; decision making; systems analysis and political violence. 3 credit hours.

PS 264 Political Development of the Third World
Political climate of new states; problems of political unity and national integration, regionalism, nationalism, imperialism; political structures, problems of leadership and decision making. 3 credit hours.

PS 281 Comparative Political Systems: Asia
Traditional and modern political and social structures of China, Japan and Korea and other Asian states including the function of the political system within each country. 3 credit hours.

PS 282 Comparative Political Systems: Europe
Political characteristics of modern European states. Emphasis on political, social and economic institutions, structures, the impact of modern European developments on integration. France, Germany, United Kingdom, USSR, Yugoslavia, Czechoslovakia, Sweden and Switzerland. 3 credit hours.

COURSES

PS 283 Comparative Political Systems: Latin America
Political modernization, development in Latin America, political institutions, national identity, leadership, integration, political socialization and political ideologies. 3 credit hours.

PS 284 Comparative Political Systems: Africa
Colonial background; constitutional framework. Political institutions and governmental structures of African states. 3 credit hours.

PS 285 Comparative Political Systems: Middle East
Colonial background, legal framework of nationhood; political, social and economic structures of development. Turkey, Egypt, Lebanon, Syria, Jordan, Iraq and Iran. 3 credit hours.

PS 304 Political Parties
Prerequisite: PS 121. Voting and electoral behavior; nominations and campaign strategy; pressure groups; political party structure and functions of the party system in the American political community. 3 credit hours.

PS 308 Legislative Process
Prerequisite: PS 121. Legislative process in the American political system; legislative functions; selection and recruitment of candidates; legislative leadership, the committee system; lobbyists, decision making; legislative norms, folkways and legislative-executive relations. 3 credit hours.

PS 309 The American Presidency
The role of the President as commander-in-chief, legislative leader, party leader, administrator, manager of the economy, director of foreign policy and advocate of social justice; nature of presidential decision making, authority, power, influence and personality. 3 credit hours.

†PS 315 Political Bureaucracy
The nature and function of governmental bureaucratic organizations with particular emphasis on the decision-making process. Attention paid to the sources and consequences of increasing bureaucracy on the ability to govern. 3 credit hours.

†PS 326 Real Estate Law
A variety of legal skills in real estate law. Special attention given to title, operations, mortgage, deeds, leases, property taxes, closing procedures and documents. 3 credit hours.

†PS 328 Legal Management and Administrative Skills
An examination of the procedures and systems necessary to run a law office efficiently. Students will learn such administrative skills as how to interview clients, conduct legal correspondence and maintain legal records. Proven management techniques for keeping track of filing dates and fees, court dockets and calendars are also examined. 3 credit hours.

†PS 329 Legal Library Skills
A systematic appraisal of the duties, responsibilities and skills required of paraprofessionals employed in law libraries. 3 credit hours.

†PS 330 Legal Investigation
Examines skills needed to conduct investigations that are a routine part of the practice of law such as principles of fact-gathering in a wide range of cases (e.g., criminal, divorce, custody, housing). 3 credit hours.

PS 331 Political Theory and the Supreme Court
Writings of prominent judicial theorists and political scientists in the area of Supreme Court judicial decision making and judicial review; the political impact of the Supreme Court; the judge as politician; implementation of judicial decisions in the political arena; current cases before the Supreme Court. 3 credit hours.

PS 332 Constitutional Law
Prerequisite: PS 121. Principles and concepts of the United States Constitution as revealed in leading decisions of the Supreme Court and the process of judicial review. 3 credit hours.

PS 342 Public Policy: U.S. National Security
This course covers the development and operation of U.S. national security policy from George Washington to the present with the major emphasis on the twentieth century and the post-World War II period. 3 credit hours.

PS 390 Political Modernization
Comparative analysis of political change and development. Political transition, political integration and nation building; institutional developments; political parties; military elites, youth, intellectuals, the bureaucracy, economic development and political culture. 3 credit hours.

†PS 406 Public Affairs Research
Students prepare recommendations on policy problems presented to the institute by governmental bodies on the municipal, state and federal levels or by private groups, 3 credit hours.

†PS 415 Internship in Legal and Public Affairs
Students will have the opportunity to work as paraprofessionals in law offices and government agencies, and to share their experiences with other interns in legal and public affairs. Permission of the instructor is required. 3 credit hours.

†PS 430 Computers and the Law
An analysis of the ways in which the advent of the computer has affected law and the legal profession. Students will explore methods of using computers for legal research, the effects of computers on criminology and the administration of justice, the impact of mass data banks on the right to privacy and the freedom of choice. 3 credit hours.

†PS 440 Legal Research
Prerequisite: PS 240. The purpose of this course is to give the student practical experience in researching and writing on realistic legal problems. Specific written assignments will require students to make use of all the library tools. Student will learn how to prepare and analyze legal memoranda and briefs. 3 credit hours.

PS 461 Political Theory: Ancient and Medieval
Prerequisite: HS 111. Foundations of Western political thought: Plato, Aristotle, St. Augustine, St. Thomas Aquinas, Machiavelli, Hobbes, Locke, Rousseau, Mill and Burke. An attempt will be made to apply the political thought of these thinkers to contemporary political questions. 3 credit hours.

PS 462 Political Theory: Modern and Contemporary
Prerequisite: HS 112. Modern and contemporary political theories. Major characteristics of ideology, the psychological and sociological functions of theories, nationalism, the nature of totalitarianism, fascism, Nazism, Marxian theory, communism and democratic theory. 3 credit hours.

PS 494-498 Studies in Political Science
Special studies on a variety of current problems and specialized areas in the field not available on the regular curriculum. 3 credit hours per course.

PS 499-500 Senior Seminar in Political Science
Prerequisite: permission of the department chairman. Construction and preparation of an individual research project in political science by the student and the presentation of that project in oral form within the seminar and in written form as the seminar thesis. Required of all political science majors. 3 credit hours.

PS 599 Independent Study
Directed research on special topics to be decided upon in consultation with the chairman of the department. 3 credit hours.

Psychology

P 111 Introduction to Psychology
Understanding human behavior. Motivation, emotion, learning, personality development, intelligence, as they relate to normal and deviant behavior. Applying psychological knowledge to everyday personal and societal problems. 3 credit hours.

P 211 Psychology of Effective Living
Prerequisite: P 111. Psychological principles and research as they apply to the problems of adjustment and competence. Analysis of problems and patterns involved in effective psychosocial functioning. 3 credit hours. (This course is for personal enrichment only and cannot be used to satisfy requirements for the psychology major or minor.)

P 212 Business and Industrial Psychology
Prerequisite: P 111. Psychological principles and research as they apply to the problems of working with people in organizations. Analysis of problems and decisions in the use of human resources, including selection and placement, criterion measurement, job design, motivation. 3 credit hours.

P 216 Psychology of Human Development
Prerequisite: P 111. Human development over the life cycle—conception through death; the changing societal and institutional framework; key concepts and theoretical approaches; understanding development through biography; child rearing and socialization here and abroad. 3 credit hours.

P 301 Statistics for Behavioral Sciences
Prerequisite: M 127. Concepts and assumptions underlying statistical methods essential to design and interpretation of research on human subjects. Fundamental descriptive and inferential methods. Laboratory fee. 4 credit hours.

P 305 Experimental Methods in Psychology
Prerequisite: P 301. Methods of designing and analyzing psychological experiments. The scientific method as applied to psychology. Consideration of research techniques, experimental variables, design problems, data analysis. 3 credit hours.

P 306 Psychology Laboratory
Prerequisite: P 305. Group and individual experiments to be carried out by students. Research techniques for studying learning, motivation, concept formation. Data analysis and report writing. Offered only in spring semester of odd-numbered years. 3 credit hours.

P 315 Human and Animal Learning
Prerequisite: P 111. Different types of human and animal learning. Learning as an adaptive mechanism. Psychological principles underlying learning. Practical applications of learning principles. 3 credit hours.

P 321 Social Psychology
Prerequisites: P 111, SO 113. The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development and modification; group interaction analysis; social conformity; social class and human behavior. 3 credit hours. (Same as SO 320).

COURSES

P330 Introduction to Community Psychology
Prerequisite: P111. Key concepts of community psychology/community mental health. Community problems, needs and resources. The helping relationship. Intervention techniques. Programming services. Understanding behavioral differences. Careers in community psychology. 3 credit hours.

P331-332 Undergradute Practicum in Community/ Clinical Psychology
Corequisites: P330 or permission of the instructor. Supervised field experience in community psychology/mental health settings. Exploration of service delivery. Development of basic repertoire of helping skills. Behavioral log. Project reporting. Understanding helping roles at individual, small group and institutional levels. 1-6 credit hours with a maximum of 3 credit hours per semester.

P336 Abnormal Psychology
Prerequisite: P111. Psychological and organic factors in personality disorganization and deviant behavior. Psychodynamics and classifications of abnormal behavior. Disorders of childhood, adolescence and old age. Evaluation of therapeutic methods. 3 credit hours.

P341 Psychological Theory
Prerequisite: P111. Contemporary theory in psychology. Emphasis on those theories which have most influenced thinking and research in sensation, perception, learning, motivation, personality. Offered only in fall semester of odd-numbered years. 3 credit hours.

P350 Human Assessment
Prerequisite: P301. Basic principles of measurement, applied to problems of the construction, administration and interpretation of standardized tests in psychological, educational and industrial settings. Offered only in spring semester of even-numbered years. 3 credit hours.

P351 Behavior Therapies
Prerequisite: P111. Principles of therapeutic behavior management. Alteration of maladaptive behavior patterns in institutional, neighborhood, home, educational and social settings by operant and respondent reinforcement techniques. Habit management in oneself and one's children. 3 credit hours.

P355 Organizational Behavior
Prerequisite: P111. Theoretical underpinning for the major approaches to understanding motivation and leadership behavior in organizations. Comparative evaluation of incentives such as salary and career growth potential as they relate to sustained motivation. The processes involved in effective leadership. Integration of motivation and leadership concepts as they affect the quality of working life. 3 credit hours.

P356 Psychology of Personnel Training and Development
Prerequisite: P111. Approaches to the identification of training needs in a variety of organizational settings. The effectiveness of the major training methodologies and techniques for assessing training program outcomes. Individual differences in response to various learning strategies. 3 credit hours.

P361 Physiological Psychology
Prerequisites: P111; SC121, SC122 or SC123. Endocrinological, neural, sensory and response mechanisms involved in learning, motivation, adjustment, emotion and sensation. Offered only in spring semester of even-numbered years. 3 credit hours.

P370 Psychology of Personality
Prerequisites: P111, junior class standing. Theory and method in the understanding of normal and deviant aspects of personality; theories of Freud, Jung, Rogers, neo-Freudians and others. 3 credit hours.

P375 Foundations of Clinical/ Counseling Psychology
Prerequisite: P336. Foundations of clinical/counseling psychology will review the humanistic, psychoanalytic, and behaviorist views on the emergence and treatment of psychopathology. The fit between theory and technique will be explored. 3 credit hours.

P480-484 Selected Topics in Psychology
3 credit hours.

P599 Independent Study
Prerequisites: consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 12.

Public Administration

PA101 Introduction to Public Administration
The nature of and problems involved in the administration of public services at the federal, state, regional and local levels. 3 credit hours.

PA150 Health Care I
Special course for hotel management majors. Admission to course by permission of the instructor. 1 credit hour.

PA 151 Health Care II
Prerequisite: PA 150. Special course for hotel management majors. Admission to course by permission of the instructor. 1 credit hour.

PA 302 Public Administration Systems and Procedures
Stressed are the major staff management functions in government and in non-profit agencies: planning, budgeting, scheduling and work analysis. 3 credit hours.

PA 305 Institutional Budgeting and Planning
Budgeting as an institutional planning tool, as a cost control device and as a program analysis mechanism is stressed. Attention is given to the salary expense budget, the revenue budget, the capital budget and the cash budget. 3 credit hours.

PA 307 Urban and Regional Management
Methods and analysis of decision-making related to urban and regional problems. Topics include housing, land use, economic development, transportation, pollution, conservation and urban renewal. 3 credit hours.

PA 308 Health Care Delivery Systems
An examination of the health care delivery systems in the U.S., including contemporary, economic, organizational, financing, manpower, cost and national health insurance issues. 3 credit hours.

PA 315 Metropolitan Planning
Analysis of demographic data, public expenditures and land-use-control surveys. Land-use controls, planned unit development, the development of new communities, and urban growth policy are discussed. State and federal policies affecting urban growth are stressed. 3 credit hours.

PA 316 Urban Housing
Encompassed are the subjects of housing management, planning and finance and policy. Specific topics such as the provision of low-income housing, the use of mortgage insurance, interest subsidies, site planning, rent controls, code enforcement, mortgage markets and the rise in housing abandonment are stressed. 3 credit hours.

PA 320 Municipal Finance and Budgeting
This course involves the analysis of fiscal policy at the municipal level. The financing and budgeting of services and improvements by local government. 3 credit hours.

PA 390 Administrative Law
The basic legal arrangement of administrative organization; rule governing the use of administrative powers; legal procedures for enforcement of executive responsibilities. 3 credit hours.

PA 404 Public Policy Analysis
Using the public perspective, the course examines the nature of the public policy process from policy formulation through policy termination. Major emphasis is given to the techniques commonly used in analyzing public policy including cost/benefit analysis and comparison of expected and actual outcomes. Provides an opportunity to gain "hands on" experience in the analysis and evaluation of public policy.

PA 405 Public Personnel Practices
Study of the civil service systems of the federal, state and local governments including a systematic review of the methods of recruitment, evaluation, promotion, discipline, control and removal. 3 credit hours.

PA 408 Collective Bargaining in the Public Sector
Analysis of collective bargaining in the public sector, with emphasis on legislation pertaining to government employees. 3 credit hours.

PA 490 Public Health Administration
An examination of public health activities, including public health organization, environmental health, disease control, use of information systems and social services. 3 credit hours.

PA 491 Public Health and Environmental Law
The role of the law in public health and environmental protection. Emphasized are the legal tools and administrative techniques used in the enforcement and administration of public health and environmental control policy. 3 credit hours.

PA 501 Public Administration Internship
Prerequisite: Consent of the coordinator. This program provides monitorial field experience with public and not-for-profit agencies. Minimum of 3 credit hours.

PA 512 Seminar in Public Administration
Selected topics related to public administration are chosen. 3 credit hours.

PA 599 Independent Study
Independent study on a project of interest to the student under the direction of a faculty member approved by the department chairman. 3 credit hours.

COURSES

Quantitative Analysis

The QA course sequence is currently under revision. Please check the registration schedule or with the department for the current status.

QA 118 Business Mathematics
Prerequisites: M109 or an equivalent level of skill demonstrated by math or QA placement test. An introduction to mathematical programming and probability and statistics. Topics include solutions to linear equations, breakeven analysis, graphical solutions to linear programming problems, mathematical modeling, measures of central tendency and variability and basic probability concepts. The course presents introductory material to both QA128 and QA216. 3 credit hours.

QA 128 Quantitative Techniques in Management
Prerequisite: QA 118. An introduction to quantitative techniques in management. Topics include linear programming, assignment problems, transportation algorithms, network and inventory models, and decision theory. 3 credit hours.

QA 216 Probability and Statistics
Prerequisite: QA 128 or equivalent. A course in elementary probability and statistical concepts with emphasis on data analysis and presentation, frequency distributions, probability theory, probability distributions, sampling distributions, statistical inference, hypothesis testing, the T, chi-square and F distributions. 3 credit hours.

QA 250 Quantitative Techniques II
Prerequisite: QA 216. A course stressing advanced applications of quantitative techniques to the solution of business problems. Topics include: classical optimization techniques, non-linear programming, topics in mathematical programming, and graph theory. 3 credit hours.

QA 314 Field Research in Business and Government
Prerequisite: QA 128. Methods of determining customer reactions to goods and services offered in the marketplace and to business establishments. Topics include: the nature and role of sampling; characteristics of sampling procedures; design of sample surveys; development of survey designs; procedures used in interviewing, tabulation, data analysis and presentation of research results; and the appraisal of performance to be expected from survey designs. 3 credit hours.

QA 333 Advanced Statistics
Prerequisite: QA 216. A course stressing advanced statistical concepts and statistical methods relating to business. Topics include: regression and correlation, multiple regression, and analysis of variance (ANOVA). Computer Use Fee. 3 credit hours.

Russian

RU 101-102 Elementary Russian
Stresses pronunciation, aural and reading comprehension, basic conversation and the fundamental principles of grammar. 6 credit hours.

RU 201-202 Intermediate Russian
Prerequisites: RU 101-102 or the equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 6 credit hours.

Science and Environmental Studies

Courses that are marked with an asterisk (*) are usually scheduled every other academic year. Courses marked with a dagger (†) may be offered at the discretion of the department.

***SC 111-112 Physical Science**
The meaning of scientific concepts and terms and their relation to other areas of learning and to daily living. Development and unity of physical science as a field of knowledge. Includes astronomy, physics, chemistry and geology. 6 credit hours.

†SC 113 Physical Science Laboratory
Prerequisite: SC 111. To be taken with SC 112 or after. Direct experience with physical experimentation. Training in design, conduct, analysis and reporting of physical experiments. Emphasis on historically important theories and experiments. Laboratory Fee. 1 credit hour.

***SC 126 Astronomy**
An introduction to present concepts concerning the nature and evolution of planets, stars, galaxies and other components of the universe. The experimental and observational bases for these concepts are examined. 3 credit hours.

***SC 135 Earth Science**
A dynamic systems approach to phenomena of geology, oceanography and meteorology. Emphasis on interrelations of factors and processes and on importance of subject matter to human affairs. Suitable for non-science as well as for science majors. 3 credit hours.

***SC146 Fundamentals of Oceanography**
Description of major aspects of geological, chemical, physical and biological oceanography. Emphasis on human use and disuse of oceans. Suitable for non-science as well as science majors. 3 credit hours.

***SC309 Scientific Photographic Documentation**
Prerequisites: BI121 or BI253 or consent of the instructor. Theory and practice of photographic image formation and recording. Photography of biological, ecological and graphic subjects of all sizes using black and white, infrared, color negative and color positive, and polaroid materials. Laboratory Fee. 4 credit hours.

***SC507 Characterization and Treatment of Wastes with Laboratory**
Prerequisites: SC135, BI361 or CH201-202, CH211; M117-118. The types of waste materials generated by agriculture, industry, transportation, municipalities and individuals are discussed and the methods of detection and identification and treatment of each type of waste materials are covered. Laboratory Fee. 4 credit hours. Spring 1986.

***SC513 Environmental Pollutants with Laboratory**
Prerequisites: CH116 and BI 330, or permission of instructor. Physical, chemical and biological properties of the major environmental pollutants. New and older methods of sampling, identification and measurement are presented. Laboratory Fee. 4 credit hours.

Shipbuilding and Marine Technology

SB101 Introduction to Shipbuilding
Prerequisites: M109 and ME101 or equivalent. This course introduces the basic terms, concepts, and methods used in describing and designing large ships. Coefficients of form are defined, structural members are described, elemental strength calculations are made for joints, hull bending stresses, critical launching loads etc. and basic approaches for watertight subdivision are explored. 3 credit hours.

SB102 Basic Ship Stability
Prerequisite: SB101. Presents fundamental concepts and methods of calculating the key stability paramaters for a displacement ship. Topics include: the geometry and effect of the center of floatation, metacentric height, and righting arm curves; causes of impaired stability from free surface, pocketing, surface permeability, etc.; and an introduction to the dynamic stability characterics of heeling energy, stability-curve criteria, rudder and maneuvering hydrodynamics etc. 3 credit hours.

SB201 Elements of Ship Propulsion
Prerequisite: SB101. This course introduces the theory and calculations used in establishing a ship's speed-power curve and the related propulsion train features. The various propulsive efficiencies are defined and used in solving typical ship resistance problems. Standard prime movers are described as well as methods for selecting a specific power plant. A short unit on propeller theory and selection is also included. 3 credit hours.

Shipyard Management

SM410 World Shipbuilding
Analysis of the world merchant fleets and the U.S. merchant fleet. Discussion and analysis of comparative maritime aids. The following countries will be reviewed: Japan, United Kingdom, Norway, Sweden, West Germany, France and the United States. A review also will be made of the Communist countries to the extent that information is available. World shipbuilding competitive factors will be analyzed in this course. 3 credit hours.

SM412 Shipyard Management: Finance
A study of determinants in forecasting shipyard investment demand. Discussion of comparative efficiency and marine facilities. Private sources of financing and federal subsidies. Cost and benefits from shipbuilding subsidies. Discussion of marine aids available in American shipbuilding. 3 credit hours.

SM414 Shipyard Management: Planning and Control
This course covers planning and control in a commercial shipyard, required by all levels of management to produce quality ships on time. Special emphasis is placed on planning for the use of resources by middle-level managers and supervisors. Stress is placed on effective management of time, facilities, materials and manpower. 3 credit hours.

COURSES

SM415 Shipyard Management: Marketing
A study of methods to employ when defining future markets that will determine new shipyard production. A study of the relationship between investment, relative productivity and share of the world shipbuilding market. Determination of market share as affected by technical efficiency and cost efficiencies. Emphasis on problems in the dry and liquid bulk sectors of the industry. 3 credit hours.

Sociology

SO113 Sociology
The role of culture in society, the person and personality; groups and group behavior; institutions; social interaction and social change. 3 credit hours.

SO114 Contemporary Social Problems
Prerequisite: SO113 or consent of instructor. The major problems which confront the present social order, and the methods now in practice or being considered for dealing with these problems. 3 credit hours.

SO155 Women in Society
An overview of woman's role in the social system. Discussion includes myths and realities of sex differences. Areas covered include analysis of the relationship of women to the economy, the arts, sciences and how these affect the behavior of women in the contemporary world. 3 credit hours.

SO214 Deviance
Prerequisite: SO113 or consent of the instructor. (Offered in the spring semester only.) Centered around deviance as a social product. The problematic nature of the stigmatization process is explored in such areas as alcoholism, crime, mental illness and sexual behavior. 3 credit hours.

SO218 The Community
Prerequisite: SO113 or consent of instructor. The community and its provisions for health, education, recreation, safety and welfare. Theoretical concepts of community, plus ethnographic studies of small-scale human communities, introduce students to fundamental concepts of community. 3 credit hours.

SO220 Physical Anthropology and Archaeology
An introduction to the study of human evolution and of present physical variations among mankind. Includes geologic time, primate evolution and early man and his culture. 3 credit hours.

SO221 Cultural Anthropology
A systematic study of the culture of preliterate and modern societies and of cultural change. Includes analyses of religion, economics, language, social and political organization and urbanization. 3 credit hours.

SO231 Juvenile Delinquency
Prerequisites: SO113, P111. This course is offered as CJ221 in university schedules. An analysis of delinquent behavior in American society; examination of the theories and social correlates of delinquency, and the sociolegal processes and apparatus for dealing with juvenile delinquency. 3 credit hours. (Same as CH221.)

SO250 Research Methods
Prerequisite: sophomore status. The student develops the concepts necessary for selection and formulation of research problems in social science, research design and techniques, analysis and interpretation of research data. 3 credit hours.

SO310 Primary Group Interaction
Prerequisite: SO113. Exploration of communication in group process. Building a group and analyzing group structure and interaction; the ways people communicate emotionally and intellectually. 3 credit hours.

SO311 Criminology
Prerequisites: P111, SO113. An introduction to the principles and concepts of criminology; analysis of the social context of criminal behavior, including a review of criminological theory, the nature and distribution of crime, the sociology of criminal law and the societal reactions to crime and criminals. 3 credit hours. (Same as CJ311.)

SO312 Marriage and the Family
Prerequisite: SO113 or consent of instructor. The formation, functioning and dissolution of relationships in contemporary American society is examined from an applied sociology perspective. 3 credit hours.

SO313 Sociology of Sport
Prerequisite: SO113 or consent of the instructor. A study of the relationships among sport, culture and society. Emphasis is on both amateur and professional sports and their impact on the larger social order. Course will examine sport from a comparative and historical perspective, but will also focus on problems confronting the world of sport in contemporary American society. 3 credit hours.

SO315 Social Change
Prerequisite: SO113 or consent of instructor. Sources, patterns and processes of social change with examination of classical and modern theories of major trends and developments as well as studies of perspectives on microlevels of change in modern society. 3 credit hours.

SO 318 Political Sociology
Prerequisite: SO 113 or consent of instructor. Concepts, theories and basic issues in the sociological analysis of political systems. Social factors in political attitudes and behavior with emphasis on understanding the functional and dysfunctional aspects of socio-political coordination and conflict. 3 credit hours.

SO 320 Social Psychology
Prerequisites: P 111, SO 113. This course is offered as P 321 in university schedules. The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development and modification; group interaction analysis; social conformity; social class and human behavior. 3 credit hours. (Same as P 321.)

SO 321 Social Inequality
Prerequisite: SO 113 or consent of instructor. Organization of social class: status, power and process of social mobility in contemporary society. Social stratification, its functions and dysfunctions, as it relates to the distribution of opportunity, privilege and power in society. 3 credit hours.

SO 322 Sociology of Education
Prerequisite: SO 113 or consent of instructor. Effects of education on American society; the organizational structure; major emphasis on the interactive roles of students, teachers and administrators; particular concern with the relationship between education and socio-economic status and problems of organizational change in the American school system. 3 credit hours.

SO 331 Population and Ecology
Prerequisite: SO 113 or permission of the instructor. Societal implications of population changes and trends; impact of man as a social animal upon natural resources, cultural values and social structures; cultural values and social structures, their influence on environmental ethics. 3 credit hours.

SO 333 Sociology of Aging
Prerequisite: SO 113 or consent of the instructor. The sociological phenomenon connected with aging in America. Discussion of the connections between personal troubles and social issues encountered by members of this society as they age. An examination of age stratification and the resultant problems of ageism, prejudice and discrimination. Systematic review of major theoretical framework and research studies; emphasis will be placed on the application of sociological theory and research in the field of aging. 3 credit hours.

SO 337 Human Sexuality
Prerequisite: SO 113 or consent of the instructor. A scientific study of human sexual behavioral patterns, social class attitudes and cultural myths. Topics include reproductive systems, sexual attitudes and behavioral patterns, abortion and sexual laws and variations in sexual functioning. 3 credit hours.

SO 340 Medical Sociology
Prerequisite: SO 113 or consent of the instructor. An analysis of a major social institution, the health care field. Emphasis placed on socio-cultural aspects of the field; general overview of the organization and delivery of health care services and the current problems and issues. 3 credit hours.

SO 390 Sociology of Organizations
Prerequisite: SO 113 or consent of the instructor. Classic sociological theories of organization with emphasis on the concepts of bureaucracy, scientific management, human relations and decision-making theory. The relevance of these ideas to concrete organization contexts, e.g., civil service, business, social movements and political parties, charitable institutions, hospitals. 3 credit hours.

SO 400 Minority Group Relations
Prerequisite: SO 113 or consent of the instructor. An interdisciplinary analysis of minority groups with particular attention paid to those regional, religious and racial factors that influence interraction. Designed to promote an understanding of subgroup culture. 3 credit hours.

SO 410 Urban Sociology
Prerequisite: SO 113 or consent of the instructor. The challenges of the cities. Residential patterns together with the physical development of cities and redevelopment plans. An examination of groups of people and their environment and the relationship between the two. 3 credit hours.

SO 413 Social Theory
Prerequisite: nine semester hours in sociology. An analysis of the development of sociology in the nineteenth and twentieth centuries with particular emphasis on the theories of Comte, Durkheim, Simmel, Weber, Marx, deTocqueville and others. 3 credit hours.

SO 414 Sociology of Occupations and Professions
Prerequisite: SO 113 or consent of the instructor. A sociological analysis of the division of labor, occupational groupings, career patterns and professional associations in modern society. 3 credit hours.

COURSES

SO 418 Public Opinion and Social Pressure
Prerequisites: SO 113, P 111. An intensive analysis of the nature and development of public opinion with particular consideration of the roles, both actual and potential, of communication and influence. 3 credit hours.

SO 440 Undergraduate Seminar
Prerequisite: consent of the department chairman. A detailed examination of selected topics in the field of sociology and a critical analysis of pertinent theories with emphasis on modern social thought. 3 credit hours.

SO 441 Sociology of Death and Suicide
Prerequisite: SO 113 or consent of the instructor. A confrontation with individual mortality and an academic investigation of such phenomena as funerals, terminal illness and crisis intervention, among many others. 3 credit hours.

SO 450 Research Seminar
Prerequisite: P 301 or M 228. The student develops and carries out an original reserach project in social science, reporting this procedure to the class. 3 credit hours.

SO 451-459 Special Topics: Sociology, Social Welfare, Anthropology
Prerequisite: SO 113, SO 221, or permission of instructor. Special topics in sociology, anthropology or social welfare on a variety of current problems and specialized areas not available in the regular curriculum. 3 credit hours.

SO 501-502 Practicum
Prerequisite: consent of the department chairman. Field experience in sociology or anthropology. Seminars in conjunction with this experience before off-campus field work is undertaken. Contact during the field work experience and guidance by the mentor provide an opportunity for understanding group and individual dynamics and their repercussions. Follow-up seminars and a paper are required. 1-6 credit hours.

SO 599 Independent Study
Prerequisites: consent of instructor and chairman of department. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 12.

Social Welfare

SW 220 Introduction to Social Welfare
Introduction to Social Welfare explores two basic questions from a historical perspective: Why are people poor, and, how societies have responded to the conditions of poverty. In examining these questions, the focus is on how the different economic, political, psychological, and sociological arrangements of society, and its social institutions, create conditions which stimulate and necessitate differing social welfare responses. 3 credit hours.

SW 340 Group Dynamics
Prerequisite: consent of the instructor. Group dynamics is designed for students who seek to develop their leadership skills in working with groups of various types. This implies a cognitive and behavioral mastery of a range of complex variables for role effectiveness, including a working knowledge of personal, group and organizational dynamics, professional skills of facilitation, and values of one's professional identity. 3 credit hours.

SW 350 Social Welfare as a Social Institution
Prerequisite: SW 220 or SO 113. The background and context of current social services are presented by a combination of guest speakers and on-site observations. 3 credit hours.

SW 401-402 Field Instruction I and II
Prerequisite: consent of the coordinator of social welfare. Supervised experience relevant to specific aspects of social welfare in human service agencies, institutions and organizations at the local, state and federal levels. Seminars to assist students with the integration of theoretical knowledge and field techniques through lectures and class presentations. Students are required to spend eight hours a week in the field. 6 credit hours.

SW 415-416 Methods of Intervention I and II
Prerequisite: SW 350. Basic social work theory is presented in conjunction with practice skills to help students begin to develop professional techniques for intervention at both the macro and micro levels of practice. 3 credit hours.

SW 475 Issues in Social Work
Prerequisite: Senior status or consent of the coordinator. A seminar to discuss and analyze current issues and changes in social work, social welfare and applied sociology. 3 credit hours.

SW 599 Independent Study
Prerequisite: Consent of the particular faculty member involved and the coordinator. Designed to permit students to pursue specific areas of interest which may not be available in the curriculum. 1-3 credit hours.

Spanish

SP 101-102 Elementary Spanish
Stresses pronunciation, aural and reading comprehension, basic conversation and the fundamental principles of grammar. 6 credit hours.

SP201-202 Intermediate Spanish
Prerequisites: SP101-102 or equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 6 credit hours.

SP301-302 Main Currents of Spanish Literature
Prerequisites: SP201-202 or equivalent. Reading of significant writers of Spanish literature from the Middle Ages to the twentieth century. 6 credit hours.

Theatre Arts

T131 Introduction to the Theatre
Play analysis from a literary standpoint and as it relates to special problems of the actor, director, designers and backstage personnel. Practical work in all phases within the classroom. Fall semester. 3 credit hours.

T132 Theatrical Style
Study of dramatic genres and theatrical conventions through script and critical reading, as well as practical work in class. Spring semester. 3 credit hours.

T141 Early World Drama and Theatre
Dramatic literature in theatrical contexts from classical Greece through Restoration England. 3 credit hours.

T142 Modern World Drama and Theatre
Dramatic literature in theatrical contexts from Realism through the 19th century to the present. Includes ethnic drama. 3 credit hours.

T341 Acting
Development of acting skills for the stage through games, improvisation and scene study. 3 credit hours.

T342 Play Directing
Prerequisite: consent of the instructor. Fundamentals of directing; staging techniques; working with actors; direction of a one-act play for workshop presentation. 3 credit hours.

T491-492 Production Practicum I-II
Prerequisite: consent of the instructor. Practicum in various areas of theatre: acting, directing, administration, technical theatre and design. Will be directly related to departmental productions. Each 3 credit hours.

T599 Independent Study
Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 3 credit hours.

Tourism and Travel Administration

TT165 Principles of Tourism and Travel
An introduction to aspects of tourism related to the world-wide tourism industry. Foreign and domestic tourism and business travel will be included. 3 credit hours.

TT166 Touristic Geography
Prerequisite: TT165. An examination of the touristic areas of the most important travel destinations. Travel destinations; current developments of travel world wide; attracting individuals, pleasure groups and business conventions. 3 credit hours.

TT215 Supervised Field Experience I
Prerequisite: Consent of the instructor. 250 hours of field work in travel offices, tourism bureaus, airlines, shipping companies, wholesalers, tour operators, hotels or restaurants. The field experience will emphasize marketing techniques, and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

TT217 Supervised Field Experience II
Prerequisite: Consent of the instructor. 250 hours of field work in travel offices, tourism bureaus, airlines, shipping companies, wholesalers, tour operators, hotels or restaurants. The field experience will emphasize selected aspects of personnel management, and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

TT219 Supervised Field Experience III
Prerequisite: Consent of the instructor. 250 hours of field work in travel offices, tourism bureaus, airlines, shipping companies, wholesalers, tour operators, hotels or restaurants. The field experience will emphasize accounting procedures, and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

TT221 Supervised Field Experience IV
Prerequisite: Consent of the instructor. 250 hours of field work in travel offices, tourism bureaus, airlines, shipping companies, wholesalers, tour operators, hotels or restaurants. The field experience will emphasize computer applications and cost control procedures and will be accompanied by readings, reports, journals and faculty conferences. 3 credit hours.

COURSES

TT267 Shipping and Cruises
An analysis of the modern shipping and cruising industries; the passenger liner as a total vacation entity and its interrelationship with airlines, tour operators and travel agencies. 3 credit hours.

TT268 Land Transportation
An examination of land transportation from its origins to modern times, including the effects of rail, coach, truck and automotive modes throughout the world. The development of major world-wide rail systems and the phenomenal growth of automotive travel are explored. 3 credit hours.

TT300 Special Topics

The tourism and travel industry is constantly changing due to new technology and avenues for their expansion and management. The purpose of these courses is to select special topics that are not covered in existing courses and expose students to recent developments and future research in the following specific course. Selected courses will be offered in the fall, spring and summer semesters.

TT300 Travel Agency Procedures
Prerequisites: TT165 and TT166. This course has been designed to aquaint the students with the often complicated day-to-day activity in a busy travel office. The research materials, the information sources and the basic handling of client documentation is thoroughly documented. 3 credit hours.

TT300 The Psychology of Leisure Travel
An exploration of the consumer-traveler to better acquaint students with the needs and motivations of travel customers. This course will provide a heightened sensitivity to consumer behavior in the travel industry and will enhance the students' ability to develop and promote services that better and more profitably serve consumers of travel. 3 credit hours.

TT300 Travel Marketing Techniques
An examination of the procedures involved in planning, developing and implementing a total travel marketing campaign. Topics will include all aspects of travel and tourism advertising and promotion, including newspapers, magazines, radio, television, direct mail, directories and other media, as well as procedures for maintaining good public relations. 3 credit hours.

TT300 Tourism Planning and Development
A detailed analysis of the immense proportions of world tourism, spanning the processes of long-range planning and management strategies that insure tourism's proper development within the economic, political and social sectors. Topics range from market analysis and conceptual planning to site development, transportation, accommodations and support industries. 3 credit hours.

TT300 Travel Agency Automation
An examination of the history of automation in the retail travel agency and insight into its computerized reservation and back office systems. Hands-on computer instruction on the AMERICAN AIRLINES SABRE computer system. 3 credit hours.

TT300 Tour Management
A thorough examination of the basics of tour management including qualifications, personality, personal input and pre-tour preparation. Successfully escorting a tour with its diverse membership, daily routine, inherent problems and post tour analysis is also explored. 3 credit hours.

TT300 Independent Travel
Prerequisites: TT165, TT166, TT267, TT268, TT370 and TT480. The resurgence of independent pre-planned travel itineraries requires specialized knowledge in many facets of the industry. Thorough knowledge of a multitude of travel facts combined with knowledge of air, shipping, accommodations, rail and vehicular transportation is a necessary requisite for the travel counselor. 3 credit hours.

TT300 Tourism and Travel Trends
The travel industry is greatly affected by current trends in world political and economic events. Studied during the course is the impact of deregulation of the airlines; world terrorism with the resulting shift of tourism destinations, as well as, weather and natural disasters such as earthquakes and eruptions; and national and international strife. 3 credit hours.

TT300 Comparative Tourism
An in-depth study and evaluation of national and international tourism policies, foreign countries and an analysis of the political, geographical, agricultural, religious and socioeconomic status of the targeted areas. 3 credit hours.

TT300 Specialized Travel
An investigation into the extraordinary and ever-increasing field of specialized travel in the leisure travel market, the rise of travel for the handicapped; travel for the adventurer. 3 credit hours.

TT300 Recreational Tourism and Hospitality
This course covers the dramatic increase in USA/Canada travel by automobile, recreational vehicle and motorcoach in the 1980s. The national, state and provincial parks and campgrounds are filled to capacity, thus creating an urgent need for expanded and improved tourist facilities. This course studies creative solutions inherent in this tourist development. 3 credit hours.

TT300 Incoming Tourism
The era of constantly changing air fares coupled with the resurgence of the charter market has resulted in a new challenge to the domestic travel industry. This course will examine these facets of the industry as it must redirect its objectives and adapt sales and service efforts to the needs of the foreign visitor. Also studied are the national origins of the visitors, their destinations and their expectations. 3 credit hours.

TT300 International Customs and Manners
This course is designed to acquaint the student with international cultural behavior. The professional travel counselor enriches any foreign journey immeasurably by helping the traveler understand and enjoy one of the important facets of the trip — the people, their customs and manners. Specifically the course includes conversational patterns, dining, bargaining, dress and particularly the development of skills on how to make friends in a foreign culture. 3 credit hours.

TT370 Airline Transportation and Reservations Procedures
A study of the impact of the airlines within the tourism and travel industries. Topics include the historical background of air travel, developments, trends and the effect of deregulation on airlines, travel agencies and the consumer. A major part of the course will be devoted to the study of airline reservations and ticketing procedures. 3 credit hours.

TT375 Travel Agency Management
Prerequisites: TT267, TT268, or consent of the instructor. A study of the travel business, defining the roles of the retail travel agent and the wholesale tour operator, and an examination of their relationships within the industry and with the traveling public. 3 credit hours.

TT480 Wholesalers and Tour Operators
An in-depth examination of the tour industry, including a detailed study of package tours, escorted tours, costing, marketing and planning. Included in the study is the creation of an individual, fully escorted tour from start to finish. 3 credit hours.

TT512 Seminar in Tourism and Travel
Prerequisite: Senior status or consent of the instructor. Current topics and developments within the hospitality industry with emphasis on career development in tourism and travel. 3 credit hours.

TT598 In-process Registration for Cooperative Education Program (Co-op)
Prerequisite: permission of the department co-op adviser required. The adviser works closely with the student in designing a plan of study that integrates full-time work experience and academic study within the student's academic major and area of interest. Non-credit, but may be used in conjunction with other appropriate credit courses.

TT599 Independent Study
Prerequisite: permission of the department chairman. Independent research projects or other approved phases of independent study. 3 credit hours.

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Lillian Goldsmith, library clerk, technical services
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John E. Benevento, vice president for administration
Eva Widger, executive secretary
Donald Wright, supervisor of buildings and grounds
Michel Jean-Pierre, supervisor of custodians

Custodial Personnel

Elke Barne, custodian
Edward Braden, custodian
Victor Bonilla, maintenance specialist
John Caprio, maintenance specialist
James Elliott, custodian
David Fletcher, custodian
Robert Fowler, maintenance specialist
Mark Hart, custodian
Ransom King, custodian
Augusto Lozada, custodian
James Massella, custodian
Louis Pagan, maintenance specialist
Antonio Perez, maintenance specialist
Michael Pollard, custodian
*__Jay Press,__ custodian

*denotes part-time employee

Scott Reed, custodian
Anthony Sparano, Jr., custodian
Pierre Ulysee, custodian
Michael Vitelli, custodian
Sy Vu, custodian

Maintenance Personnel

Terry Burr, painter
Luis DeLeon, maintenance mechanic's helper
Lloyd Diehl, maintenance mechanic
Augusto DiMarzo, maintenance mechanic
Salvatore Esposito, maintenance mechanic
Lucius Gatison, maintenance mechanic
Raymond Grossi, maintenance mechanic
Pasquale Iannucci, maintenance mechanic
Carmine Muntz, maintenance mechanic
Frederick Nitchke, maintenance mechanic
Martin Raffaele, maintenance mechanic
Charles Washington, maintenance specialist

Campus Dining Services

Geoffrey Ramsey, A.A.S., A.O.S., B.S., director
David Murphy, B.S., assistant director
Beverly Avitabile, executive secretary
Kathryn Luther, supervisor
Loretta Acampora, food service worker
Mary Carrichia, food service worker
Mary Deantonio, food service worker
Sally Ferrucci, food service worker
Marguerite Forsyth, food service worker
Mary Maltese, food service worker
*__Stephanie Mitchell,__ food service worker
Pasqualina Petrecca, food service worker
Dorothy Reed, food service worker
*__Kevin Richardson,__ food service worker
Carmel Simeone, food service worker
Rosemarie Skarlos, food service worker
Barbara Degennaro, baker
David Kaiser, chef
Hilda Young, cook
Michael Maione, cook
*__Anthony Armstrong,__ utility
*__Franz Brown,__ utility
Wilfredo Calderon, utility
Vera Cusanelli, utility
*__Anthony Jones,__ utility
Jean King, utility
Louis Zotti, utility
Maurice Frasier, receiver
Diane Ascenzia, special events coordinator
Rita Giordano, cashier
Mary A. Maltese, cashier
Concetta Maio, cashier

*denotes part-time employee

Career Development
Pamela Francis, B.S., M.A., director
Barbara Sweetman, secretary

Counseling
Deborah Everhart, B.A., M.A., Ph.D., director
Scott Somerville, B.S., M.A., assistant director
Linda Copney, coordinator

Financial Aid
James T. Anderson, B.A., M.S., director
Jane C. Sangeloty, B.A., assistant director
Robin D. Esposito, B.S., counselor
Karen Monteith, B.A., counselor
Marilyn Jones, secretary
Denise A. Washington, secretary

Health Services
Deborah Everhart, B.A., M.A., Ph.D., director
Patricia J. Coleman, B.S.N., R.N., assistant director
Paula Cappuccia, R.N., A.S., staff nurse

International Student Affairs
Carol Murphy, B.A., director
Matthew T. Gilbride, B.A., assistant director
Marion Hunt, secretary

Personnel
Carol Riordan, executive secretary
Joanne Krol, secretary

Radio Station
Rose Majestic, A.S., B.S., M.Ed., general manager
Tom Osenkowsky, chief engineer

Residential Life
Rebecca D. Johnson, B.A., M.A., associate dean, director
Leigh Cromey, B.A., M.A., assistant director
Terri Corkran, B.A., resident director
Scott Lynskey, B.A., resident director
Marion Lawton, B.S., secretary

Services
Polly MacDiarmid, console attendant
Stephanie Magliola, console attendant
***Gertrude Festa,** console attendant
Angelo Rosadini, university postmaster
***Fred Jaser,** mail clerk
***Judy Mitchell,** evening receptionist

**denotes part-time employee*

Student Affairs and Services

John E. Benevento, B.S., M.S., acting dean
Ann Massini, executive secretary
H. Richard Dozier, B.A., M.A., assistant dean, director of minority student affairs
Cornelia Mas, secretary

Student Records

Joseph Macionus, B.S., M.P.A., university registrar
Nancy A. Carroll, B.S., M.S. associate registrar
Virginia Klump, registrar for graduate records
Gail Berardesca, data entry operator
Ann Chernick, transcript credit analyst
Joan DeLeo, secretary/undergraduate records
Audrey Kushner, data communications specialist
Ellen Leuzzi, administrative secretary
Marjorie Manfreda, recorder/graduate records
Denise Mazzucco, secretary/graduate records
Marianne Stillie, senior clerical assistant/graduate records

Veterans' Affairs

Karen Monteith, B.A., counselor for veterans and financial aid

Office of Development and Alumni Relations

Nikki de L. Lindberg, director
John M. Carlin, B.S.F.S., associate director for corporate and foundation relations
Robert H. Morgan, B.S., M.A. associate director
Patricia A. Morgan, B.S., M.B.A., associate director for alumni relations
Katherine E. Cowles, B.A., assistant director for alumni relations
Celia A. Lenkiewicz, executive secretary
Mary Colandrea, alumni secretary
Mary A. DeRosa, alumni financial secretary
Lois Ucas, secretary/word processor

Standing Committees of the University

Academic Standing and Admissions: Caroline Dinegar, Ph.D., chairman
Board of Athletic Control: William M. Leete, M.Ed., chairman
Pre-medical, Pre-veterinary Medical and Pre-dental Advisory Committee: Charles L. Vigue, Ph.D., chairman
Computer Policy Board: Frederick Fischer, B.S., chairman
Deans' Council: Alexis N. Sommers, Ph.D., chairman
Financial Aid: James T. Anderson, M.S., chairman
Institute of Computer Studies Steering Committee: Richard B. Jones, Ph.D., chairman
Undergraduate Women: Robert Caruso, Ph.D., chairman

Faculty 1986 *

Adams, William R., Instructor, Industrial Engineering
B.S.E.E., B.S., M.S., University of New Haven

Aliane, Bouzied, Assistant Professor, Electrical Engineering
B.S.E.E., Ecole Polytechnique d'Alger; M.S.E.E., Ph.D., Polytechnic Institute of New York

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B.S., M.S., Southern Connecticut State College

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Bassett, Richard A., Lecturer, Management and Marketing
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Chun, Kee W., Professor, Physics
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Faculty Professional Licensure and Accreditation

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Bentivegna, Beverly A., Registered Dietician, American Dietetic Association
Bockley, William R., Certified Purchasing Manager
Carson, George R., Professional Engineer, Connecticut, Massachusetts, New York, New Jersey; Landscape Architect, Connecticut; Land Surveyor, Connecticut, Massachusetts; Professional Planner, New Jersey
De Mayo, William, Certified Public Accountant, Connecticut
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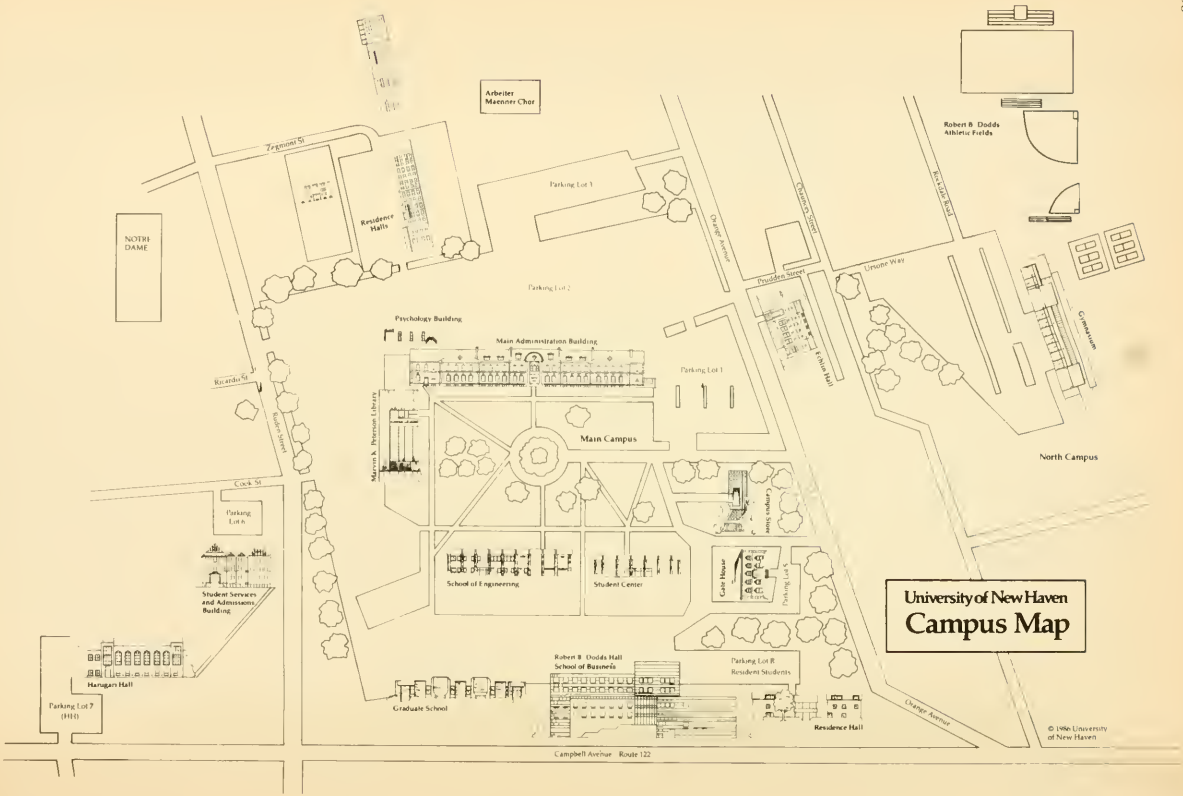
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Main Campus
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Student Services and Admissions Building
Campus Store
School of Engineering
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Parking Lot 7 (HH)
Graduate School
Robert B. Dodds Hall School of Business
Parking Lot 8 Resident Students
Residence Hall
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INDEX

A

Academic Regulations 39
Accounting & Finance,
Department of 117
(A) Accounting courses 211
(FI) Finance courses 237
(LA) Business Law courses ... 218
Accounting 119
Accreditation 13
Adding a Class 46
Administration 276
Admission Procedures
Day Students 33
Evening Students 34
International Students 34
Advanced Placement 41
Advanced Study 41
Air Transportation
Management 126, 191
Alumni Office 24
Anthropology Minor 110
Applied Mathematics 102
Arson Investigation 193
Art (see Humanities)
Art courses 232
Arts and Sciences, School of 73
Athletics 24
Attendance Regulations 49
Aviation 190
(AE) Aviation courses 214

B

Bioengineering 80
Biology and Environmental
Studies and General Science,
Department of 77
(BI) Biology courses 216
(SC) Science and Environmental
Studies courses 265
Biomedical Computing 79
Board of Governors 275
Book Store 25
Business Administration 127
Business Economics 124
Business Law courses 218
Business, School of 115

C

Calendar 6
Campus Store 25
Career Development Office 25
Center for Learning Resources ... 26
Certificate Programs 206
Arson Investigation 196
Bar Management 178
Casino Management 178
Club Management 177
Culinary Arts 177
Dietetic Technology 184
Economics 125
Executive Housekeeping
Administration 177
Fire Prevention 196
Food Service Education 178
Graphic Design 97
Hazardous Materials 197
Hotel Management 176
Hotel and Restaurant
Management 176
Industrial Fire Protection 197
Institutional Food Service
Administration 184
Interior Design 97
Journalism 86
Law Enforcement Science 138
Legal Affairs 107
Mass Communication 123
Occupational Safety
and Health 201
Paralegal Studies 106
Photography 97
Professional Pilot 192
Public Affairs 107
Quantitative Analysis 125
Restaurant Management 176
Security Management 138
Tourism and Travel
Administraion 180
Changes in Arrangements 56
Changing a Major 47
Chemical Engineering 146
Chemistry and Chemical
Engineering Department 83, 146
(CM) Chemical Engineering
courses 220
(CH) Chemistry courses 218
Civil and Environmental
Engineering, Department of 151
(CE) Civil Engineering courses 221
Class, Definition of 42
Clubs and Organizations 23
Commencement (see Graduation)
Communication,
Department of 84, 121
(CO) Communication courses 223
(J) Journalism courses 247
Computer Center 16
Computer Engineering 153
Computer Institute 15
Computer Science 158
Computer Science courses 225
Concentrations
Applied Math-Computer
Science 102
Applied Math-Natural
Science 102
Community-Clinical
Psychology 109
English–Literature 89
English–Writing 90
General Psychology 109
Industrial/Organizational
Psychology 109
Public Administration—City
Planning and Management 140
Public Administration—Health
Administration 140
Conditional Admission 34
Cooperative Education 26, 203
Coordinated Course 40
Core Curriculum 67
Correctional Administration 134
Councils, Students 23
Counseling Center 27
Course Listings 211
Course overloads 36
Courses at Other Colleges 40
Credit, Academic 40
Crediting Examinations 41
Criminal Justice 133
(CJ) Criminal Justice courses .. 227

D

Dean's List 44
Deferred Enrollment 35

Degrees ... 20
Development Office ... 27
Developmental Studies Program 27
Dietetics courses ... 229
Dietetics and Institutional Management, Department of ... 181
Dietetic Technology ... 183
Dining Service, campus ... 170
Disabled Student Services ... 28
Dismissal ... 45
Division of Evening Studies ... 204
Division of Special Studies ... 209
Dropping a Class ... 46

E

Economics and Quantitative Analysis, Department of 86, 123
(EC) Economics courses ... 231
Electrical and Computer Engineering, Department of 153
(EE) Electrical Engineering courses ... 232
Employment, Student ... 26
Engineering, School of ... 143
Engineering Science courses ... 234
English, Department of ... 88
(E) English courses ... 235
(FR) French courses ... 239
(GR) German courses ... 239
(RU) Russian courses ... 265
(SP) Spanish courses ... 269
Environmental Science ... 81
Evening Studies ... 204
Executive Housekeeping Administration ... 175

F

Facilities ... 15
Faculty ... 286
Faculty Professional Licensure and Accreditation ... 294
Fees ... 53
Finance ... 120
Finance courses ... 237
Financial Accounting ... 119
Financial Aid ... 59
Fine & Applied Arts (see Humanities) ... 92
Fire and Occupational Safety ... 195
Fire Prevention Certificate ... 196
Fire Science ... 192
Fire Science Administration ... 194
Fire Science courses ... 238
Fire Science Technology 194
Food (see Meal Plans)
Foreign Language Study ... 88
Foreign Students ... 28
Forensic Science ... 135
French courses ... 239
Full-time Student ... 42

G

General Dietetics ... 181
General Studies, A.S. ... 76
German courses ... 239
Government, student (see Councils)
Grade Point Average, see Quality Point Ratio ... 43
Grade Reports ... 43
Grading system ... 43
Graduate School ... 19
Graduation ... 49
Graduation with Honors ... 51
Grants ... 60
Graphic Design ... 93
Groton/New London location ... 207
GSL ... 60

H

Handicapped Services (see Disabled Students)
Health Services ... 28
History of the University ... 13
History, department of ... 91
(HS) History courses ... 239
Honesty Policy ... 49
Honors ... 51
Hotel, Restaurant and Tourism Administration, School of ... 169
(DI) Dietetics courses ... 229
(HR) Hotel and Restaurant Management courses ... 241
(TT) Tourism and Travel courses ... 270
Hotel & Restaurant Management 173
Housing (see Residential Life)
Human Resources Management 128
Humanities, Fine and Performing Arts, Department of ... 92
(AT) Art courses ... 212
(MU) Music courses ... 255
(PL) Philosophy courses ... 257
(T) Theatre Arts courses ... 270

I

Independent Study ... 41
Industrial Engineering and Computer Science, Department of ... 156
(IE) Industrial Engineering courses ... 245
Industrial Technology: Shipbuilding ... 166
Institute of Computer Studies ... 15
Institute of Law and Public Affairs ... 105
Institutional Food Service Administration ... 182
Interior Design ... 94
International Business ... 131
International Business courses ... 247
International Services ... 28
Intersession ... 206
Intramural Athletics ... 24

J

Jobs ... 26
Journalism ... 85
Journalism courses ... 247

L

Law (Business) courses ... 218
Law Enforcement Administration ... 134
Law Enforcement Science ... 136
Learning Resources, Center for ... 26
Leave of Absence ... 47
Legal Affairs ... 107
Library ... 16
Loans ... 60

M

Management, Department of ... 125
(MS) Management Information Science Courses ... 248
(MG) Management Science courses ... 248
(QA) Quantitative Analysis courses ... 265
(SM) Shipyard Management courses ... 266
Management Information Systems ... 127

Management Science 128
Managerial Accounting 119
Make-up Examinations 49
Marketing and International Business, Department of ... 130
(IB) International Business courses 247
(MK) Marketing courses 249
Materials Technology 162
Materials Technology courses ... 252
Mathematics, Department of ... 100
(M) Mathematics courses 250
Matriculation 42
Meal Plans 28
Mechanical Engineering, Department of 161
(ES) Engineering Science courses 234
(ME) Mechanical Engineering courses 253
(MT) Materials Technology courses 252
Mechanical Technology: Shipbuilding 165
Microcomputer Labs 17
Minority Student Affairs 29
Minors
Accounting 120
Anthropology 111
Art 96
Bioengineering 80
Biology 80
Black Studies 106
Business Administration 129
Chemistry 150
Civil Engineering 152
Communication 122
Computer Science 160
Criminal Justice 138
Dietetic Technology 184
Economics 87, 124
Education 81
Electrical Engineering 155
Environmental Science 83
Executive Housekeeping Administration 178
Finance 120
Fire Science 196
Hotel & Restaurant Management 175
History 92
Industrial Engineering 160
Institutional Food Service Administration 184
International Business 132
Legal Affairs 107
Literature 90
Management 129
Marketing 132
Mathematics 103
Mechanical Engineering 165
Nutrition 81
Physics 104
Political Science 106
Psychology 111
Public Administration 140
Public Affairs 107
Shipyard Management (career minor) 130
Social Welfare 113
Sociology 111
Theatre Arts 98
Tourism and Travel Administration 180
World Music 100
Writing 90
Music courses 255
Music and Sound Recording 99

N

National Art Museum of Sport ... 17
NDSL 60
Nutrition Minor 81

O

Occupational Safety and Health 198
OSH courses 256
Overload restrictions 36

P

Paralegal Studies 106
Part-time Students 42
Payments 55
Pell Grants 60
Philosophy (see Humanities)
Philosophy courses 257
Philosophy of the University 14
Photography 96
Physics, Department of 103
(PH) Physics courses 257
Placement, Academic 35
Political Science, Department of . 105
(PS) Political Science courses .. 259
Pre-architecture 95
Premedical/Predental/ Preveterinarian Program 78
Probation and Dismissal 45
Professional Pilot Certificate 192
Professional Studies 201
Professional Studies, Department of 189
(AE) Aviation courses 214
(FS) Fire Science courses 238
(SB) Shipbuilding and Marine Technology courses 266
Occupational Safety and Health courses 256
Professional Studies and Continuing Education, School of 187
Programs of Study 4
Progress 41
Psychology, Department of 107
(P) Psychology courses 262
Public Affairs 107
Public Administration 139
Public Management, Department of 133
(PA) Public Administration courses 263
Publications, Student 24

Q

Quality Point Ratio 43
Quantitative Analysis courses .. 265

R

Radio Station, Student (WNHU) 30
Readmission 46
Refund of Tuition 55
Registration 35
Regulations 39
Repetition of Work 45
Residency Requirements 50
Residential Life 29
Russian courses 265

S

Satisfactory Progress 41
Scholarships and Awards 60
School of Arts and Sciences 73
School of Business 115
School of Engineering 143
School of Hotel, Restaurant and Tourism Administration 169

School of Professional Studies and Continuing Education 187
Science courses ... 265
Security Management ... 137
SEOG ... 60
Shipbuilding Technologies ... 165
Shipbuilding and Marine Technology courses ... 266
Shipyard Management minor ... 130
Social Welfare ... 110
Sociology and Social Welfare, Department of ... 109
(SO) Sociology courses ... 267
(SW) Social Welfare courses ... 269
Southeastern Connecticut location ... 207
Spanish courses ... 269
Special Studies ... 209
Sports ... 24
Status ... 42
Student Activities ... 23
Student Center ... 29
Summer Sessions ... 206

T

Theatre Arts ... 98
(T) Theatre Arts courses ... 270
Tourism and Travel Administration, Department of ... 179
(TT) Tourism and Travel courses ... 270
Transfer of Credit from the University ... 48
Transfer of Credit to the University ... 40
Transfer of student status ... 42
Tuition, Fees and Expenses ... 53
Tuition Refund ... 55
Tutoring ... 26

U

Undergraduate Admissions ... 33
UNH in Southeastern Connecticut ... 207
University Core Curriculum ... 67

V

Varsity Sports ... 24
Veterans' Affairs ... 30

W

Winter Intersession ... 206
Withdrawal
From the University ... 48
From a Major ... 47
From a Class ... 46
WNHU, Radio Station ... 30
Women's Affairs ... 30
Work-Study Program ... 60
World Music ... 98
World Music courses ... 255
Writing Proficiency Exam ... 50

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